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RUTH ANNE SWANWICK (B.A., M.Ed.)

DEAF CHILDREN'S DEVELOPING SIGN BILINGUALISM:  
DIMENSIONS OF LANGUAGE ABILITY, USE AND AWARENESS.

THESIS SUBMITTED TO THE OPEN UNIVERSITY FOR THE  
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SCHOOL OF EDUCATION

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## **ABSTRACT**

The focus of this study is deaf children's developing bilingualism in British Sign Language and English (sign bilingualism). Sign bilingualism differs from bilingualism in two spoken languages in that the two languages are differently perceived and produced. This thesis explores individual sign bilingualism focusing on ways in which deaf children use their two languages, their perception of the differences between them and the influences that that two languages have on each other.

It is argued that deaf children's literacy development might be supported through the development of their tacit metalinguistic skills acquired as a result of constantly moving between their two languages and so reflecting on and comparing the different ways in which BSL and English convey meaning. This study identifies what constitutes metalinguistic ability in bilingual deaf children and explores the extent to which such abilities might support the development of their literacy skills.

Because this is a developing area in terms of research and educational practice this study involves an exploratory and creative approach to data collection. Six individual case studies have been carried out with sign bilingual deaf children between 7 and 8 years of age. Information about each child's strategies for moving between BSL and written English has been collected through specifically developed translation and comparative analysis activities.

From the data collected some of the individual characteristics of sign bilingualism including dimensions of metalinguistic proficiency are described focusing on the individual's skills within, between and across each language domain. The findings reveal dimensions of children's sign bilingualism which support the development of language profiles and



assessment procedures in the educational setting and point to new areas of linguistic research. They also illustrate the potential of a focus on metalinguistic abilities for developing approaches to literacy instruction and for providing a framework for further research into deaf children's sign bilingual language development.

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## LIST OF CONTENTS

CONTENTS	PAGE NUMBER
<b>INTRODUCTION</b>	<b>1</b>
<b>The research context</b>	<b>1</b>
<b>Sign language</b>	<b>2</b>
<b>The educational context</b>	<b>4</b>
Oral education	4
Total Communication	6
Sign bilingualism	7
<b>Issues in sign bilingual education</b>	<b>8</b>
Parallels with bilingualism in two spoken languages	8
Sign bilingual language development	9
Literacy development	11
<b>Research direction</b>	<b>13</b>
<b>Research approach</b>	<b>15</b>
<b>Structure of the study</b>	<b>16</b>
<b>Linguistic terminology used in the study</b>	<b>17</b>
 <b>CHAPTER 1. DEAFNESS AND DEVELOPMENT</b>	 <b>18</b>
<b>1.1 Introduction</b>	<b>18</b>
<b>1.2 A perspective on deafness</b>	<b>18</b>
<b>1.3 A medical description of deafness</b>	<b>19</b>
1.3.1 Aetiology of deafness	20
1.3.2 Severity of deafness	21
1.3.3 Assessment of deafness	21
1.3.4 Age of onset of deafness	23
<b>1.4 Deafness and early language development</b>	<b>23</b>
1.4.1 The languages used by deaf children	24
1.4.2 Spoken language development	25
1.4.3 Sign language development	28
1.4.4 The language development of deaf children of deaf parents and deaf children of hearing parents	30
<b>1.5 Sign bilingual language development</b>	<b>34</b>
1.5.1 Deaf children of deaf parents	35
1.5.2 Deaf children of hearing parents	36
1.5.3 Hearing children of deaf parents	38
<b>1.6 Social and emotional development</b>	<b>39</b>
1.6.1 Attachment	40
1.6.2 Independence	40
1.6.3 Impulsivity	40
<b>1.7 Intelligence and deafness</b>	<b>41</b>
1.7.1 Deficiency research	42
1.7.2 Piagetian research	43
1.7.3 Cognitive advantages and deafness	44
1.7.4 Problems with research into intelligence	46
<b>1.8 Deafness and school achievement</b>	<b>47</b>
1.8.1 Reading and deafness	47

1.8.2 Writing and deafness	53
1.8.3 Mathematics and deafness	55
1.8.4 Formal examination success	56
1.8.5 Problems with research into educational achievements	57
<b>1.9 Conclusion</b>	<b>58</b>
<b>CHAPTER 2. SIGN BILINGUALISM AND EDUCATION</b>	<b>60</b>
<b>2.1 Introduction</b>	<b>60</b>
<b>2.2 Similarities and differences between spoken and sign bilingualism</b>	<b>61</b>
2.2.1 Language preferences	62
2.2.2 Language modalities	63
2.2.3 Bilingual and bimodal language use	64
<b>2.3 Theories of bilingual cognition and sign bilingualism</b>	<b>67</b>
<b>2.4 Towards a model of sign bilingual education</b>	<b>68</b>
2.4.1 The reported advantages of early acquisition of sign language	68
2.4.2 The proven legitimacy of sign languages	68
2.4.3 The achievements of deaf children in oral-aural approaches	70
2.4.4 The problems with Total Communication approaches	70
2.4.5 The importance of identity and self esteem	73
<b>2.5 The theoretical rationale for sign bilingual education</b>	<b>73</b>
2.5.1 Research into spoken bilingualism	74
2.5.2 The theory of linguistic interdependence	75
2.5.3 Sign language development	76
2.5.4 Spoken language development	77
2.5.5 Literacy development	78
2.5.6 Problems with the theoretical rationale	79
<b>2.6 Outcomes of sign bilingual education</b>	<b>81</b>
2.6.1 The goals of sign bilingual education	81
2.6.2 Reports from Scandinavia	82
2.6.3 Reports from the USA	87
2.6.4 Reports from France	88
2.6.5 Reports from the UK	90
<b>2.7 Conclusion</b>	<b>95</b>
<b>CHAPTER 3. SIGN BILINGUALISM AND LITERACY</b>	<b>98</b>
<b>3.1 Introduction</b>	<b>98</b>
<b>3.2 Deaf children learning English as a second language</b>	<b>99</b>
3.2.1 Similarities with hearing E2L learners	99
3.2.2 Differences from hearing E2L learners	101
<b>3.3 Research into sign bilingualism and literacy development</b>	<b>103</b>
3.3.1 Early sign language skills as facilitative for literacy development	103
3.3.2 Studies of sign bilingual children's literacy development	106
3.3.3 The role of sign language in the teaching of literacy	109
3.3.4 A focus on metalinguistic abilities	109
<b>3.4 Problems with research into sign bilingualism and literacy</b>	<b>116</b>
<b>3.5 Metalinguistic abilities</b>	<b>118</b>

3.5.1 Metalinguistic proficiency as a cognitive advantage of bilingualism	118
3.5.2 The threshold hypothesis	120
3.5.3 A model of metalinguistic proficiency	120
3.5.4 Parameters of metalinguistic proficiency	121
<b>3.6 Translation as a metalinguistic task</b>	<b>123</b>
3.6.1 The translation process	124
3.6.2 Children's translation abilities	127
3.6.3 Translation as a research technique	128
3.6.4 Translating from sign language to written language	129
<b>3.7 Conclusion</b>	<b>133</b>
 <b>CHAPTER 4. METHODOLOGY 1: THE PILOT STUDIES</b>	 <b>136</b>
<b>4.1 Introduction</b>	<b>136</b>
<b>4.2 A conceptual framework</b>	<b>137</b>
<b>4.3 Rationale for the pilot studies</b>	<b>138</b>
<b>4.4 Aims of pilot study 1</b>	<b>139</b>
<b>4.5 Methodology for pilot study 1</b>	<b>141</b>
<b>4.6 Findings from pilot study 1</b>	<b>143</b>
4.6.1 Spoken English	143
4.6.2 BSL	144
4.6.3 Sign Supported English (SSE)	145
4.6.4 Grammatically incorrect spoken English	145
4.6.5 Written English	146
4.6.6 Finger-spelling	146
4.6.7 Language switching and mixing	146
4.6.8 The children's linguistic repertoire	148
4.6.9 Teaching goals and perceptions	150
4.6.10 Language switching and mixing	150
4.6.11 Decisions about language use	151
<b>4.7 Conclusions from pilot study 1</b>	<b>152</b>
<b>4.8 Aims of pilot study 2</b>	<b>154</b>
<b>4.9 Methodology for pilot study 2</b>	<b>154</b>
<b>4.10 Findings from Pilot study 2</b>	<b>156</b>
4.10.1 The demands of the different learning activities	156
4.10.2 The adults' interaction around the task	158
4.10.3 The children's approaches to the language learning activities	159
<b>4.11 Conclusions from the pilot studies</b>	<b>161</b>
4.11.1 The children as language learners	161
4.11.2 Implications for the teaching of English	162
4.11.3 Implications for the next phase of research	162
 <b>CHAPTER 5. METHODOLOGY II: THE MAIN STUDY</b>	 <b>164</b>
<b>5.1 Introduction</b>	<b>164</b>
<b>5.2 Methodological rationale</b>	<b>165</b>
5.2.1 Grounded theory approach	165
5.2.2 The use of case studies	165
5.2.3 The subjects	166

5.2.4 Individual profiles of subjects	167
5.2.5 The research context	169
5.2.6 The researcher's role	172
5.2.7 Similarities with action research	172
<b>5.3 Methods of data collection</b>	<b>173</b>
5.3.1 Elicitation techniques	174
5.3.2 Elicitation activities	176
5.3.3 Interviews	177
5.3.4 Triangulation	178
<b>5.4 Focus of the analysis</b>	<b>180</b>
5.4.1 Analysis of the translation tasks	180
5.4.2 Analysis of the comparative analysis tasks	181
<b>5.5 Developing a transcription technique</b>	<b>182</b>
<b>5.6 Reliability of the research</b>	<b>185</b>
<b>5.7 Research validity</b>	<b>187</b>
<b>5.8 Generalisability (external validity)</b>	<b>188</b>
<b>5.9 Conclusion</b>	<b>189</b>
<b>5.10 Introduction to the empirical work</b>	<b>190</b>
<b>CHAPTER 6. ELICITATION ACTIVITY 1: TRANSLATION WRITING</b>	<b>192</b>
6.1 Introduction	192
6.2 Focus of analysis	192
6.3 Transcripts of the story	193
6.4 Written translation problem 1.	196
6.5 Written translation problem 2.	200
6.6 Written translation problem 3.	205
6.7 Conclusions	210
6.7.1 Specific issues related to the individuals	210
6.7.2 General issues	211
<b>CHAPTER 7. ELICITATION ACTIVITY 2: NON-TRANSLATION WRITING</b>	<b>215</b>
7.1 Introduction	215
7.2 Focus of analysis	216
7.3 Hannah - contrasting texts	217
7.3.1 Hannah - analysis	218
7.3.2 Hannah - discussion	219
7.4 Jake - contrasting texts	219
7.4.1 Jake - analysis	220
7.4.2 Jake - discussion	220
7.5 Mark - contrasting texts	221
7.5.1 Mark - analysis	222
7.5.2 Mark - discussion	223
7.6 Lucy - contrasting texts	224
7.6.1 Lucy - analysis	224
7.6.2 Lucy - discussion	225
7.7 Nicola - contrasting texts	226
7.7.1 Nicola - analysis	227
7.7.2 Nicola - discussion	228

<b>7.8 Simon - contrasting texts</b>	<b>229</b>
7.8.1 Simon - analysis	229
7.8.2 Simon - discussion	230
<b>7.9 Conclusion</b>	<b>231</b>
7.9.1 The influence of spoken English on the writing process and outcomes	231
7.9.2 The influence of BSL on the writing process and outcomes	232
7.9.3 The influence of the stimulus on the writing process and outcomes	232
 <b>CHAPTER 8. ELICITATION ACTIVITY 3: COMPARING A BSL STORY WITH A WRITTEN ENGLISH STORY</b>	 <b>235</b>
<b>8.1 Introduction</b>	<b>235</b>
<b>8.2 The procedure for each task</b>	<b>235</b>
<b>8.3 The transcriptions</b>	<b>237</b>
<b>8.4 The researcher's role</b>	<b>238</b>
<b>8.5 The analysis of the activity outcomes</b>	<b>238</b>
<b>8.6 Presentation of the analysis</b>	<b>239</b>
<b>8.7 Analysis of the children's responses to comparison problem 1.</b>	<b>242</b>
8.7.1 Group 1	242
8.7.2 Group 2	244
<b>8.8 Analysis of the children's responses to comparison problem 2.</b>	<b>247</b>
8.8.1 Group 1	247
8.8.2 Group 2	249
<b>8.9 Analysis of the children's responses to comparison problem 3.</b>	<b>251</b>
8.9.1 Group 1	251
8.9.2 Group 2	254
<b>8.10 Analysis of the children's responses to comparison problem 4.</b>	<b>256</b>
8.10.1 Group 1	256
8.10.2. Group 2	258
<b>8.11 Discussion</b>	<b>259</b>
8.11.1 The children's understanding of the task	259
8.11.2 Strategies used by the children to move from BSL to written English.	260
8.11.3 Differences between the individual children	262
<b>8.12 Conclusion</b>	<b>264</b>
 <b>CHAPTER 9: ELICITATION ACTIVITY 4: COMPARING A WRITTEN ENGLISH STORY WITH A BSL STORY</b>	 <b>267</b>
<b>9.1 Introduction</b>	<b>267</b>
<b>9.2 The procedure for each task</b>	<b>268</b>
<b>9.3 The transcriptions</b>	<b>269</b>

<b>9.4 The analysis of the activity outcomes</b>	<b>269</b>
<b>9.5 Presentation of the analysis</b>	<b>270</b>
<b>9.6 Analysis of the children's responses to comparison problem 1.</b>	<b>270</b>
9.6.1 Group 1	270
9.6.2 Group 2	274
<b>9.7 Analysis of the children's responses to comparison problem 2.</b>	<b>277</b>
9.7.1 Group 1	277
9.7.2 Group 2	279
<b>9.8 Analysis of the children's responses to comparison problem 3.</b>	<b>282</b>
9.8.1 Group1	282
9.8.2 Group 2	284
<b>9.9 Analysis of the children's responses to comparison problem 4.</b>	<b>287</b>
9.9.1 Group 1	287
9.9.2 Group 2	289
<b>9.10 Discussion</b>	<b>292</b>
9.10.1 Differences between the individual children	292
9.10.2 General issues	294
<b>9.11 Conclusion</b>	<b>296</b>
 <b>CHAPTER 10. CONCLUSION</b>	 <b>298</b>
<b>10.1 Introduction</b>	
<b>10.2 Specific conclusions related to individuals</b>	<b>299</b>
<b>10.3 Individual sign bilingualism</b>	<b>306</b>
<b>10.4 Individual sign bilingualism and bilingual theory</b>	<b>308</b>
10.4.1 Definitions of bilingualism	308
10.4.2 Routes to bilingualism	309
10.4.3 Bilingual curriculum delivery	309
10.4.4. Code mixing	310
10.4.5 Language separation	311
10.4.6 Experience of writing in sign language	312
<b>10.5 Metalinguistic skills</b>	<b>313</b>
10.5.1 Evidence of metalinguistic skills	314
10.5.2 Defining metalinguistic ability within a sign bilingual context	315
10.5.3 An insight into sign bilingualism through metalinguistic activities	316
<b>10. 6 Literacy development</b>	<b>318</b>
10.6.1 Metalinguistic skills which are transferable to literacy development	319
 <b>10.7 Implications for bilingual theory</b>	 <b>320</b>
10.7.1 Metalinguistic awareness and literacy development	321
10.7.2 Minority language children	322
<b>10.8 Methodology issues</b>	<b>323</b>
10.8.1 Research procedure	324



10.8.2 Research in a natural setting	327
10.8.3 Interpretation of the results	327
10.8.4 Opportunities for generalisation	328
<b>10.9 Final conclusions</b>	<b>328</b>
10.9.1 The heterogeneous nature of sign bilingualism	328
10.9.2 The concept of metalinguistic proficiency	329
10.9.3 Implications for deaf education	330
10.9.4 Future research directions	331
<b>REFERENCES</b>	<b>333</b>
<b>APPENDICES</b>	<b>353</b>
<b>Appendix 1.</b>	<b>354</b>
Language profiles of children in main study	
<b>Appendix 2. (non-print item not bound with thesis)</b>	
The video of the BSL story used as the source for the translation writing	
<b>Appendix 3.</b>	<b>360</b>
The picture sequence used as a stimulus for the non-translation writing.	
<b>Appendix 4.</b>	<b>365</b>
The children's full written translations of the BSL story	
<b>Appendix 5.</b>	<b>368</b>
Interview schedules	
<b>Appendix 6.</b>	<b>370</b>
Timetable of data collection	
<b>LIST OF FIGURES</b>	
<b>Figure 1.</b>	<b>17</b>
Terminology used to describe sign language and other sign systems	
<b>Figure 2.</b>	<b>21</b>
The range of frequencies present across all speech sounds	
<b>Figure 3.</b>	<b>22</b>
Descriptors for pure tone audiograms	
<b>Figure 4.</b>	<b>56</b>
1996 Examination results of deaf students in mainstream education	
<b>Figure 5.</b>	<b>137</b>
Conceptual framework for the study	
<b>Figure 6.</b>	<b>155</b>
Situations observed for pilot study 2	
<b>Figure 7.</b>	<b>179</b>
Relationship between the research questions and data analysis	
<b>Figure 8.</b>	<b>184</b>
The transcription code	
<b>Figure 9.</b>	<b>190</b>
Structure of the empirical part of the study	

## **INTRODUCTION**

The central goal of this study is to establish a deeper understanding of deaf children's use and development of sign language and English (sign bilingualism) within an educational context. Within this over-arching thesis, specific research questions about the nature of deaf children's sign bilingualism are asked which lead to the empirical aspect of the study. To explain the rationale for this thesis an overview of the research and educational context and the identification of the key issues in deaf education is necessary. This introduction sets the context for this research study, discusses the use of particular terms in the study and points to the specific research goals and intended outcomes.

### **The research context**

The successful education of deaf children requires a full understanding of the impact of deafness on the individual in terms of their linguistic, cognitive and social development. Without this understanding appropriate educational policy and pedagogy cannot be developed. Spoken language and audition have for many years been considered to be the only legitimate educational goals associated with deafness. This has led to an emphasis on advances in hearing-aid technology, and more recently, cochlear implants. Research has focused largely on deaf children's early spoken language. Research into early language development and interaction have led to a related focus on social development and parent-child interaction. Again this has centred on spoken rather than sign language environments although the balance is beginning to shift. Research into deaf children's cognitive development and academic achievements has also not addressed, until more recently, the cognitive strengths of deaf children who have early and extensive exposure to sign language. It is intended that this study will contribute to the emerging research which

addresses the use of sign language by considering deaf children's developing bilingual skills in sign language and English.

## **Sign language**

Throughout this study the term 'sign language' will be used to refer to naturally evolved sign languages which are recognised as distinct from the various 'sign systems' which have been developed to be used alongside spoken language (Sutton-Spence and Woll, 1999). This distinction is central to the discussion of sign bilingualism as it clarifies the different and separate nature of signed and spoken languages. British Sign Language has only been recognised as a language since 1976 (Brennan, 1976). This study of sign bilingualism draws therefore on a relatively new and developing research field.

Sign language is a language which exploits a different transmission channel to spoken language. It is a language which is perceived through vision and expressed through the hands and the body, whereas spoken language is perceived and expressed through the ear and the vocal tract. Sign language users have a means of linking visual form with meaning as opposed to vocally articulated sounds with meaning.

Over the last decade research has established that there are universal properties which all languages share regardless of whether they are signed or spoken languages (Sutton-Spence and Woll, 1999). It is accepted that at the deepest level (i.e. how the language is organised, how the rule systems work, its level of grammatical complexity and potential expressive power) signed and spoken languages are very similar (Klima and Bellugi, 1990). It is at the surface level (i.e. the way in which the two languages are produced and perceived) where the main differences lie.

The lexical units of sign language are produced by the hands but the rest of the body, in addition to the hands, has an important role to play in the production of meaning in sign language. One early description of the unique properties of sign language illustrates the infinite possibilities of this mode of communication:

Signs are better understood (.....) as simultaneous combinations and recombinations of various hand configurations, types of movements, and places of articulation (Bellugi and Fischer 1972, p.175).

The grammatical processes of signed and spoken languages are rooted in the modality in which they are presented. Sign language thus employs the use of spatial points for referencing identified places, people or objects. Time lines are also used to locate events in the past, present and future. The visual-gestural modality allows for simultaneous production of sign components. That is to say that the location, orientation and non-manual component of a sign can all be expressed and perceived simultaneously. In this way, a verb and adverbial information and the nature of the subject can all be revealed in one sign. In spoken English these components would have to be specified using different words sequentially. Sign languages are not made up of sequential arrangements of elements in this way and do not have a written form. These differences between signed and spoken languages have implications for early language acquisition and the development of literacy skills which are central to this study. The terminology used in this study to discuss sign languages and other sign systems is defined in Figure 1. at the end of the Introduction.

## **The educational context**

This research takes place in an area of education which has been dominated by controversy regarding the best way to educate deaf children. This debate has focused mainly on the question of which language or mode of communication should be used. This summary of the historical context illustrates how and why a sign bilingual educational approach has evolved and leads to the issues raised by such an approach.

### **Oral education**

The education of deaf children throughout Europe and North America has traditionally been dominated by a focus on the use of residual hearing and amplification and the teaching of lip-reading and speech. This trend dates back to an international landmark conference held in Milan in 1880 where it was recommended that the education of deaf children should be through an oral-aural approach. This led to the banning of sign language and the dismissal of many deaf teachers in schools for the deaf throughout Europe.

Within the oral-aural approach deafness is seen as a deficiency and attempts are made to compensate for the loss of hearing through amplification and intensive speech training so that the deaf children can lead their lives as hearing people. This approach places emphasis on the fact that the majority of deaf children are born to hearing parents and so intelligible spoken language and the ability to understand spoken language will enable these children to communicate with their families and the wider hearing community (Watson, 1998).

This approach is supported by the conviction that deaf children can develop spoken language skills in the same way as hearing children do, as a preferred language and as a means of developing literacy skills, as long as they are given sufficient opportunities to

develop the use of their residual hearing as soon as possible after birth. Although this approach may not meet the needs of all deaf children, support through sign language is not normally offered until an individual is seen to be failing to develop spoken language as it is argued that developments in hearing aid technology mean that the residual hearing of even profoundly deaf children can be exploited. Within this approach the use of sign language in the home and in the teaching context is not encouraged as it is thought to detract from the emphasis on audition and confound the already difficult task of encouraging children to use their aural and oral skills as far as possible (Watson, 1998).

One of the questions raised concerning the oral approach focuses on the educational attainments of deaf children over the last 30 years. Research into deaf children's educational attainments has shown that the oral approach has not been successful for the majority of deaf children (Conrad, 1979). Where isolated studies have reported high achieving deaf pupils in oral programmes, these findings cannot be taken as representative of the whole population of deaf children (Powers, Gregory and Thoutenhoofd, 1998).

The oral-aural approach also raises several moral and political issues to do with linguistic and social development. Because the emphasis is placed on the development of spoken language rather than the development of linguistic competencies, the individual's potential in sign language is not considered to be significant. This is a questionable stance as choices are being made about a deaf individual's language development, usually by hearing individuals, based on a set of principles rather than on a broad and objective assessment of a child's linguistic abilities and preferences.

The natural and easy development of a preferred language is seen as a fundamental human right which is normally not in question for most children (Skutnabb-Kangas, 1994). The

exclusion of sign language within this approach is seen by many as an extreme violation of this right (Lane, 1984), which can result in dire consequences in terms of an individual's social and emotional development thus offering an inadequate preparation for adult life (Gregory, Bishop and Sheldon, 1995).

Proponents of the oral-aural approach openly accept that there will be some delay in the child's language development and also that some children do not succeed within this approach. For these children it is accepted that sign language can then be introduced (Lynas, 1994; Watson, 1998). Given the understood consequences of delay in acquisition of language it can be argued that acceptance of any such a delay can never be endorsed.

Finally, the oral-aural approach is the manifestation of a medical model of deafness, where the effects of deafness are viewed simplistically as barriers to functioning as a normally hearing person. There is no recognition of the broader linguistic and cultural needs of deaf individuals beyond the goal of overcoming the limitations of deafness to function as far as possible as a hearing person. Clearly this perspective does not reflect the current reality as there exists a flourishing adult deaf community who wish their linguistic minority status and cultural identity to be recognised (Padden and Humphries, 1988; Ladd, 1988). To deny deaf children access to this, as well as to the easiest route to the development of linguistic competence, ignores positive models of disability and the multilingual and multicultural make-up of society at large.

### **Total Communication**

These problems with the oral-aural approach have led to a greater degree of scepticism about its presumed application for all deaf children and resulted in the increasing use of sign language in educational programmes. Originally the term Total Communication (TC) was

used to describe the use of whatever form of communication was deemed to be most appropriate for the individual child (Denton, 1976). Although sign language is included in this description, the use of this approach in practice has become synonymous, in some schools and services, with the combined use of speech and signs rather than the clearly separate use of two languages (Lynas, 1994). However, a study by Baker and Knight (1998) of 15 schools and 104 units specifying a TC policy reveals that there is a growing trend towards the recognition and planned use of two distinct languages and thus a greater movement towards a sign bilingual approach. Because of the ambiguous interpretation of the term Total Communication caution is needed in the interpretation of research results where TC is cited. Namely, the difference between the use of Manually Coded English systems or the use of two distinct languages of BSL and English should be clarified.

### **Sign bilingualism**

The movement towards the distinct use of two languages (BSL and English) reflects a more sophisticated understanding of the linguistic needs of deaf children, a growing acceptance of BSL within deaf education and more positive attitudes to bilingual education in general. Within the field of deaf education the term 'sign bilingual' is the most recently accepted means of describing deaf children and adults who are bilingual in a spoken and signed language such as English and BSL (i.e. cross modal bilingualism). The current use of this term in the educational context allows deaf pupil's educational needs to be considered within a broad bilingual framework but for their specific learning needs related to their cross modal bilingualism to be recognised. This term is used throughout this study rather than simply 'bilingualism' because it reflects current thinking and developments in deaf education and because it highlights certain unique issues related to cross-modal bilingualism, such as full access to both languages, code-mixing and transfer from one modality to another, which are considered in the study.



The development of sign bilingual educational policy is both recent and ongoing. The first national document which fully describes this approach offers the following definition.

This is an approach to the education of deaf children in which the language of the deaf community (British Sign Language, BSL) and the language of the hearing community (English) are used. In the case of children from minority ethnic groups it is more appropriate to use the term 'sign multilingualism' in order to recognise the position of home languages other than English. The outcome of a sign bilingual education should be that each child attains levels of competence and proficiency in BSL and English sufficient for their needs as a child and as an adult. The process through which this is achieved should be the planned use of BSL and English before and throughout schooling (Pickersgill and Gregory, 1998, p.3).

Over the last 10 years the development of linguistic research into sign language and the increased use of sign language in the educational setting has led to national interest in a sign bilingual approach. Despite the growing use of the term 'sign bilingualism' there are many issues which are little understood which have significant developmental and educational implications. These issues provide the impetus for this research study in that they direct the literature review and the specific research questions.

### **Issues in sign bilingual education**

Sign bilingual education is driven by linguistic, moral and political imperatives but little research has so far been undertaken which specifically considers sign bilingual children's language and cognitive development and academic achievements. The theoretical basis for

sign bilingual education does not therefore lead to a secure pedagogical model. Much of the current practice within this approach relies on the exploratory and pioneering spirit of individuals and the outcomes remain to be evaluated.

### **Parallels with bilingualism in two spoken languages**

Up until now the theoretical model which has been used to conceptualise sign bilingualism and plan sign bilingual education has been based on research into bilingualism in two spoken languages. The major principles drawn from this field include a focus on the children's development of their home or first language and the transferability of skills between the first and the second language. Sign bilingual education has also drawn upon the growing positive attitude to bilingualism in general and particularly the discussion of the advantages of being bilingual. This has provided a starting point but sign bilingualism presents a number of separate issues which need to be explored beyond this 'best fit' framework. These issues are mainly concerned with the early access that deaf children have to the two languages of sign language and English, the different nature of the two languages that they are developing and the implications of these two factors for English literacy development. This study seeks to explore aspects of the nature of sign bilingualism independently. Several assumptions made about sign bilingual development based on spoken language bilingualism will therefore be examined.

### **Sign bilingual language development**

One such assumption is that sign bilingual deaf children's preferred language will be that through which they will be able to learn and develop cognitive skills. In the discussion of sign bilingual deaf children's language development the terms 'dominant' and 'preferred' are often used interchangeably to refer to the language the individual is most easily able to acquire or develop. In this study a distinction is purposefully made between the two terms.

The term 'preferred' is used holistically to describe an individual's general language use in contrast to particular instances where BSL-dominance or English-dominance might be evident. This distinction is considered to be relevant in this context because there may be instances where an individual's preferred language may not be the dominant one in certain situations. For example, an individual's preferred language may be BSL but English may dominate where the interaction is with a hearing person or where discussion is around written English. This distinction is particularly important for the discussion and interpretation of the empirical aspect of the study.

It is assumed that deaf children will develop a stronger (first) and a weaker (second) language. How such degrees of comparative strength and weakness are to be measured has not been established. Deaf children's experiences of learning two languages will be different from that of bilinguals in two spoken languages as they are learning to operate within two language but three modalities (spoken, written and signed). Their access to both sign language and English may also be problematic, unless they are deaf children of deaf parents, which is the minority of deaf children. The experience of sign bilingual language development needs therefore to be further explored. Information needs to be gathered about how deaf children use both of their languages and how their two languages interact in different situations. We know that there are various routes to becoming sign bilingual depending on home language and school experience and we can only speculate about the resulting experience of being sign bilingual based on what we know about spoken language bilingualism. One goal of this study is therefore to develop our understanding of the nature of individual sign bilingualism in terms of strengths and weaknesses in both languages, language dominances or preference and the use of both languages in a bilingual learning environment.

## **Literacy development**

A related assumption is that deaf children's developing skills in BSL will provide a foundation for their subsequent English language development. The current theoretical model draws on the developmental interdependence theory (Cummins, 1991) and proposes that the most appropriate route to bilingualism for deaf children involves using the learner's well developed skills in sign language as a basis for developing literacy skills in the second language. Adopting this theory is problematic because it rests on several key assumptions which cannot be applied to sign bilingualism.

The first assumption intrinsic to the interdependence theory is that the learner brings age-appropriate receptive and expressive first language skills to the learning context and that literacy instruction will therefore be based on their established skills as communicators and language users. While we know that sign language can be acquired as a first language for deaf children who grow up in a sign language environment with one or more deaf parents, most deaf children are born into hearing families who do not know a natural sign language. We cannot make assumptions therefore about the level of deaf children's sign language skills when they enter school and certainly not all bilingual deaf children will have age-appropriate sign language skills when they first begin to learn English as second language.

It is also assumed in the theory that aspects of literate proficiency will be transferred from the first language to the second language. However, bilingual deaf children have not had the opportunity to acquire literacy skills in their preferred language because sign language has no written form. Some parallels do exist with other learners whose first language (L1) does not have a written form but these learners are still able to benefit from the support of the spoken form of the second language (L2) when learning to use its written form. Currently some developments are taking place exploring systems for writing down actual signs

(signwriting). This system is a way of recording the movements of any sign language through a series of visual symbols for facial expression, handshape, movements and gesture. The signwriting system can be very detailed or used in a simplified form that, it is claimed is now becoming the world standard (Sutton, 1998; Gangel-Vasquez, 1998). Such a system has not yet been adopted on a large scale in the UK educational system for deaf children but the outcomes from this study will enable us to consider whether such a system might enhance the transfer between English and BSL.

In order to counter these problems an alternative route to literacy development has been suggested which implies that sign language can provide a bridge into literacy development which by-passes spoken English. This entails a different approach to reading development which focuses on skills of text analysis and prediction rather than making links with the spoken language to decode and construct meaning from text. Arguments for this approach focus on the importance of language awareness and metalinguistic ability. Metalinguistic awareness requires a more abstract knowledge and understanding of language which involves the ability to think and talk about language, to recognise characteristics of a language and to see how language is structured (Bialystok, 1991). It is suggested that for sign bilingual deaf children, with limited access to the spoken form of the language they are learning, the development of metalinguistic understanding provides an alternative means of learning the second language (Mahshie, 1995; Neuroth-Gimbrone & Logiodice, 1992; Hansen, 1990; Neilson and Armour, 1983; Akamatsu and Armour, 1987; Schneiderman, 1986). This theory has provoked considerable debate but there is currently no robust research evidence which endorses these claims or which clarifies how sign bilingual children do use their two languages to tackle literacy problems. This study will pursue this theory and seek to clarify the meaning of metalinguistic ability relative to sign bilingualism. This

will involve the identification and description of deaf children's metalinguistic skills and the exploration of the support that such skills might lend to literacy development.

## **Research direction**

Sign bilingual education presents many issues for research because of its relatively recent growth and the background from which it has developed. This thesis seeks to contribute to the development of sign bilingual educational policy by increasing our understanding of the nature of sign bilingual deaf children's language abilities, use and awareness.

The central goal of this study will be a redefining of the notion of sign bilingualism focusing on the ways in which deaf children use their two languages, their perception of the differences between them and the influences that that two languages have on each other. It is considered that these three areas of focus will provide original data relevant to the development of a broader and more in-depth sign bilingual language profile. Because these areas have not hitherto been considered a new methodology will be developed to provide the relevant information. It is hypothesised that sign bilingual deaf children are a heterogeneous group in that individual routes to sign bilingualism, language strengths and weaknesses, language dominances and patterns of language use will vary significantly and that these differences can be usefully explored through a focus on metalinguistic proficiency. A greater understanding of these individual differences will inform sign bilingual educational provision and classroom practice. These findings will also contribute to the development of broader and more meaningful measures of describing and assessing deaf children's sign bilingualism.

Within this goal a more specific question addresses sign bilingual children's literacy development. Deaf children's poor achievements in literacy are well documented and the changes from oral-aural to TC and sign bilingual policies have so far made little impact on these educational outcomes. It is argued that sign bilingualism provides deaf children with the advantage of a secure preferred language which should support the development of their literacy skills. As we have seen, how sign language can support English literacy development is not clear although a number of practitioners and researchers are proposing that a focus on metalinguistic abilities may provide the bridge needed between the two languages. This study incorporates a specific focus on metalinguistic abilities into the exploration of sign bilingualism. This study seeks to identify what constitutes metalinguistic ability in bilingual deaf children and the extent to which such abilities might support the development of deaf children's literacy skills. The results of these findings have implications for educational practice but also for the wider academic field of bilingualism where the notion of metalinguistic ability and its relevance to children's bilingual language learning *remains poorly defined*.

Finally, the lack of established research technique necessitates the development of an original methodology. The methodology developed for this study is creative in that it draws on current spoken and sign bilingual classroom practice of translation and comparative analysis work but adapts the procedures for deaf children. One of the goals of the study is therefore to appraise the value of these language activities as research techniques. A further outcome of this study is the development of a new methodology for this field which will enable the continued collection of original data regarding deaf children's sign bilingualism.

## **Research approach**

Because the development of a new and appropriate methodology is needed, pilot work is necessary in order to provide a fuller understanding of the context and shape an original research methodology. The outcomes of the pilot work are reported in so far as they influence the design of the main study.

The research takes place within a Local Education Authority service for deaf pupils which has a sign bilingual policy which promotes the role of deaf adults and British Sign Language in the education of deaf children. The development and use of BSL is encouraged through the employment of deaf native-users and hearing staff proficient in sign language.

The service staff and the children's parents were fully consulted prior to and throughout this research project. The researcher was able to meet regularly with staff and parents at service development meetings and family support groups respectively. This provided a forum for informal discussion about the research as well as the opportunity to report on progress and preliminary findings. The parents' permission to involve the children in the research, including reporting and presentations, was sought in writing but the informal meetings ensured that the parents fully understood the procedures and the implications for the children.

A case study approach is used so that commonalties and individual differences can be explored in depth. The subjects for the study are six primary aged children, in two bilingual settings (three children in each) who all used both BSL and English for learning and for socialising at home and at school, and so can be considered to be bilingual to varying degrees. These children are also all in a bilingual educational programme where deaf and



hearing adults work together and where both BSL and English (spoken and written) are used in the teaching situation. The children have varying degrees of hearing loss (2 moderate, 2 severe, 2 profound) and although this is considered in the analysis, the main criteria for the choice of the subjects is the functional use of both languages in the learning context.

The exploratory nature of this thesis embraces a grounded approach to the development of our understanding of sign bilingualism. The problems associated with developing a theoretical basis for sign bilingual education based on spoken language bilingualism have been discussed and this is also true of the research approach. To work solely on previously derived theories from spoken language bilingualism may result in different or unexpected evidence being overlooked or misinterpreted. The study therefore moves towards a theoretical framework in that the theory emerges from the interpretation and analysis of the data. It is intended that this study will make a significant contribution to this area which is little understood and yet which raises profound issues about language and learning.

### **Structure of the study**

The first three chapters of the study provide a review of the relevant research and findings regarding deaf children's development, education and literacy skills. This review shapes the detail of the research questions and provides pointers for the initial pilot work. Chapters 4 and 5 present the method and results of the pilot work and the main methodology respectively. The results and analysis of the main empirical work are presented together in Chapters 6 - 9. These chapters address the findings from the elicitation activities used with the individual children. This includes a translation activity from BSL to written English (Chapter 6) and a non-translation writing activity (Chapter 7). There are also two activities

involving comparisons between BSL and written English (Chapters 8 and 9). Chapter 10 draws together the conclusions from these separate activities and presents the final discussion and conclusions in relation to the original research questions.

**Linguistic terminology used in the study**

British Sign Language American Sign Language	BSL ASL	Complete languages which differ in lexicon and syntax from English
Sign Supported English Pidgin Sign English simultaneous communication	SSE PSE sim-com	Manual representations of English where only some words are signed (usually content words)
Signed English Seeing Exact English	SE SEE	Complete manual representations of English where signs are created to represent all of the grammatical markers of English
Manually Coded English	MCE	An umbrella term for the different forms of systems contrived to manually represent aspects of spoken English
Cued Speech	CS	A mode of communication for visually conveying spoken languages at the phonemic level, consisting of handshapes and hand placements

*Figure 1. Terminology used in the study relating to sign language and sign systems.*

## **CHAPTER 1. DEAFNESS AND DEVELOPMENT**

### **1.1 Introduction**

This chapter provides a definition of deafness and a description of the implications of deafness for the developing child. The initial discussion of the use of terminology and approaches to describing deafness set the sociolinguistic context for this study and presents the research perspective. The discussion of the implications of deafness for the child's linguistic development provides the essential background for the empirical aspect of the study. This review considers deaf children's development of spoken and sign language and points to ways in which current educational provision provides for their linguistic abilities. An overview of deaf children's educational attainments is also presented which places the empirical work in an educational context and shapes the research questions.

### **1.2 A perspective on deafness**

This study embodies a particular perspective on deafness which requires an understanding of issues relating to deafness and disability and entails the use of certain terminology. A distinction is often made in the literature concerning deafness and education between a medical and linguistic model of deafness, where a model reflects a social framework of beliefs, values and expectations. Where deafness is constructed within a medical model of disability, emphasis is placed upon the individual's functional limitations resulting from their hearing loss and on the goal of treating or rectifying the deficiency as far as possible. This is reflected in early research into deafness which focused on the cognitive, social and linguistic restrictions imposed by deafness (Myklebust, 1964; Furth, 1966; Conrad, 1977). In contrast to this, a linguistic model of deafness considers deaf individuals as potentially belonging to a

linguistic and cultural group, the distinctive feature of which is the use of sign language. The linguistic and cultural perspective argues that deafness does not have to predestine a child for limited development in these areas as sign language can be developed as a preferred language and a basis for continued cognitive development.

The perspective taken in this study is that the potential disruption to spoken language development caused by deafness must be explored but within a context which recognises the broader linguistic potential of deaf children. Deafness is therefore considered in this study as a linguistic and cultural phenomenon not just a sensory deficit. The most significant difference between these two models is that a linguistic and cultural model recognises deaf children's predisposition towards the acquisition of sign language ( Lane, 1988; Padden and Humphries, 1988; Kyle and Woll, 1985). A linguistic and cultural perspective shifts the emphasis of research into deafness from what deaf children cannot do to what they can do and seeks to understand the ways in which they develop and learn differently from hearing children.

### **1.3 A medical description of deafness**

This study defines 'deafness' as a hearing loss which is significant enough to have an effect on a child's process of development of linguistic competence in a spoken language and the term 'deaf' is used throughout to refer generally to children and adults with such a hearing loss. The term 'deaf' is used in this study in preference to 'hearing-impaired' which emphasises the non-functioning aspects of the individual rather than the positive characterises of deafness such as the use of sign language. It is accepted that this term does not reflect the heterogeneous nature of deafness in that, within this group the nature and extent of each individual's hearing loss differs significantly. However, to review research

and educational developments this level of detail is not always required. Where children are discussed individually, such as in significant case studies or for the purposes of the empirical work, fuller descriptions of hearing loss characteristics are included.

Details of the nature of an individual hearing loss considered to be relevant to this study include the type or aetiology of the hearing loss, the level of severity and the age of onset. These are the most significant characteristics as considered together they describe the physical parameters and point to the likely implications of an individual's deafness.

### **1.3.1 Aetiology of deafness**

The aetiology of a hearing loss is concerned with the organic causes of the loss. The two causes are normally described as conductive and sensori-neural. Problems associated with a conductive loss occur in the parts of the ear which are used for conducting sound from the outer ear to the inner ear (oval window) i.e. in the auditory canal, eardrum or bones in the middle ear. Conductive losses are often associated with fluid in the middle ear due to infection or virus, causing a temporary loss and are normally treatable by controlling the fluid build up or removing the blockage.

Problems associated with a sensori-neural loss occur in the parts of the inner ear which convert sound to neural impulses and transmit the nerve impulses to the brain i.e. in the cochlea and the auditory nerve. This type of loss has hitherto not been medically treatable although cochlear implantation can in some cases improve the amplification of the incoming sound (Archbold, 1997). It is also possible to have a mixed loss which is a mixture of conductive and sensori-neural problems which can complicate treatment procedures. The scope of either of these types of hearing loss may be unilateral or bilateral (present in one or both ears).

1.3.2 Severity of deafness

The severity of a hearing loss is measured according to the frequency or pitch of the sounds perceived and the intensity or loudness. Frequency is measured in Hertz (Hz). This term is used to describe the number of cycles (sound waves) per second in any tone. The human ear is capable of hearing sounds from 20 Hz (very low sounds) to 20,000 Hz (very high sounds) but the frequencies of speech usually fall between 250 Hz and 8, 000 Hz.

1.3.3 Assessment of deafness

To assess to what degree the individual’s pitch (frequency) and loudness (intensity) perception are affected a measurement is taken of the intensity needed for an individual to perceive sound at a specific frequency. Speech reception normally occurs between 250 Hz and 2000 Hz and so this is the extent of the range tested. The range of frequencies present across all the speech sounds are indicated in the tale below.

Low frequency sounds 25 - 500 Hz	Middle frequency sounds 500 - 2000 Hz	High frequency sounds 2000 - 8000 Hz
<i>a</i> as in cat <i>oo</i> as in mood <i>ow</i> as in cow <i>or</i> as in bored	<i>ay</i> as in day <i>ee</i> as in weed <i>d</i> as in do <i>m</i> as in mouse	<i>s</i> as in sink <i>sh</i> as in ship <i>f</i> as in fence <i>th</i> as in think

Figure 2. The range of frequencies present across all speech sounds

The intensity or loudness of any particular frequency is measured in decibels (dB). The normal threshold of speech perception is between 0 - 20 dB (that is the quietest sound the individual can detect) and so measurements are made relative to this norm. At the other

end of the scale the pain threshold is around 120 dB. The decibel scale runs from -10dB to 140dB and is a logarithmic scale. This means that 20dB is 10 times louder than 10dB and so on. Each individual's hearing loss can be categorised according to the average decibel range at which they are able to detect sound across the frequency range. The measures are based on pure tone audiograms so that the threshold of hearing for each frequency can be identified. The descriptors used to label the different severities of hearing loss are illustrated below in Figure 3.

Audiological category	Degree of hearing loss
Normal	0 - 19 dB
Mild	20 - 40 dB
Moderate	41 - 70 dB
Severe	71 - 95 dB
Profound	95 dB +

*Figure 3. Descriptors for pure tone audiograms (BSA, 1988)*

Different levels of hearing loss are likely to have a different impact on the development of an individual's spoken and written language skills. It can be argued that a child with a mild hearing loss will follow the same developmental progression in language as a child with normal levels of hearing (Ross, 1990). Educational decisions should not however be based on these audiological descriptors as they do not reflect the different ways in which deafness can affect an individual, nor do they indicate how much an individual may gain from the use of a hearing aid in terms of speech perception. Aided thresholds provide further information in that they test for how much residual hearing is available to the child with hearing aids.

### **1.3.4 Age of onset of deafness**

The onset of an individual's hearing loss is usually described in medical terms as either congenital or adventitious. Traditionally, distinctions have also been made between pre and post-lingual deafness although this is problematic because the age at which individual children acquire language cannot be accurately defined and also because language learning can never be described as complete (Braden, 1994). The use of the terms pre and post lingual also obscures essential information about the causes of deafness. Deafness which is linked to medical trauma (such as meningitis, measles, mumps, maternal rubella) is more likely to be associated with other additional physical or learning difficulties than deafness of a hereditary nature (Marschark, 1993). It is therefore important that these individual differences are recognised and acknowledged for the purposes of research and educational placement.

### **1.4 Deafness and early language development**

Historically, the two prevailing questions regarding deaf children's language development have been identified by King (1984) as (i) How do deaf children acquire spoken language? and (ii) How well do deaf children acquire spoken language? In response to the first question, much of the earlier literature concerning deafness suggested that deaf children can acquire English through the same process of language acquisition as hearing children although it was accepted that some differences in development would be evident such as deaf children's vocabulary and grammar and that the process of language development may take longer than for a child with normal hearing (Lynas, 1994; Nolan and Tucker, 1988; Clarke, 1978). This is a theoretical stance which has shaped educational approaches despite the evidence to the contrary that the majority of deaf children eventually leave school without a secure mastery of spoken and written language.



### **1.4.1 The languages used by deaf children**

The response to the second question, with reference to deaf children's spoken and written English skills is not a conclusively positive one. It is for this reason that research into deaf children's language development has moved beyond the exclusive consideration of spoken and written English skills to include the process of acquiring a visual-spatial language alongside or instead of an auditory-oral one. It is argued that the goal of spoken language acquisition is not a realistic one for all deaf children, particularly for those with severe to profound hearing losses, and that exclusive training in this area does not provide the benefits hoped for (Mahshie, 1995; Marschark, 1993; Swisher, 1989). Current research must therefore consider the spoken and sign language development of deaf children and this requires some clarification of the terms used.

The sign language available to deaf children in the UK, which will be referred to in this study, is British Sign Language (BSL). BSL is a complete language, with its own grammar and lexicon, which is not a derivative of spoken English (Woll, 1998). The sign languages used in other countries, which may also be mentioned in this study are all different languages from BSL, including American Sign Language (ASL) even though the two countries share a spoken and written language.

A distinction must also be made between natural sign languages such as ASL or BSL and Manually Coded English systems which involve the contrived use of signs from the lexicon of BSL (or ASL) alongside the spoken language. Manually Coded English (MCE) is usually used to provide support for spoken English for the deaf listener/watcher by providing a visual representation of some of the words. There are several Manually Coded English systems (see Figure 1. for an overview of these terms). Some systems attempt to provide visual representation for every word and grammatical marker (such as 'ed' or 'ing'). These

are usually referred to Seeing Exact English (SEE) or Signed English (SE). Others aim to represent only some parts of English, namely the content or meaning carrying words and these are usually termed Sign Supported English (SSE) or simultaneous communication (sim-com). Because of these variations it is important to make a distinction between which language is being used and in which modality (i.e. spoken, written or signed). This is particularly relevant for the interpretation of research findings as the difference between a child using BSL or SSE can be a significant detail even though a general description of 'signing' may be given.

#### **1.4.2 Spoken language development**

Most deaf children are born into a family whose native language is a spoken one and into a community who take speaking and listening for granted. More than 90% of deaf children have parents with normal hearing ( Meadow-Orlans 1990; Gallaway and Woll, 1994). The other 5 - 10% of deaf children are born to deaf parents and so sign language may be used in the home. Hearing parents are faced with difficult choices about language use with their deaf child. Some may use spoken language exclusively with their deaf child or they may use spoken language combined with some manual signs to clarify and add visual support to the spoken message. In some cases, hearing parents may be learning to use a natural sign language at the same time as their child is developing language and so the child will be exposed to both sign language and English. We will initially consider implications for the deaf child's acquisition of spoken language.

A hearing loss inevitably creates difficult conditions for the acquisition of a spoken language. For deaf children who are growing up in a spoken language environment the implications of their deafness in terms of language exposure, early interaction and the development of linguistic competence are significant. This applies particularly to

congenitally deaf children with severe to profound hearing losses for whom the use of hearing aids is less likely to restore the normal perception of speech (Gallaway and Woll, 1994). For a deaf child who cannot fully receive speech this process is inevitably interrupted unless the interaction moves into a visual-gestural modality. It is normally only deaf parents who are fluent in sign language themselves who are able to communicate easily with their deaf children. Gallaway argues that the 'baseline requirements' for the successful acquisition of either a signed or a spoken language are often not met for the majority of deaf infants (1998, p. 50).

Hearing parents of deaf children are not only faced with difficult choices regarding which form of communication to use but are also dealing with shock and a possible sense of loss at the discovery of their child's deafness. (Meadow-Orlans, 1990; Gregory and Knight, 1998). Parents will inevitably be upset by the diagnosis of a deaf child within the family because of the immense implications for the child and the family unit. With no prior experience of deafness hearing parents may find it more difficult to adopt an immediately positive perspective, to appreciate what aspect of their daily lives may need modifications and to pre-empt their child's difficulties as well as recognise successes which may be different from their counterparts in hearing families.

Children's language learning is essentially an interactive process where caretakers finely tune and shape their language to draw the child's language forward (Snow, 1972; Pine, 1994). Successful early interaction is therefore a fundamental prerequisite for language acquisition. The natural process of finely tuned interaction relies on the ability of both participants to receive and respond to each other in predictable ways. Gallaway and Woll suggest that the language experience of the deaf child learning spoken language is 'qualitatively and quantitatively inferior' to that of the hearing child (1994, p.198).

One of the conditions which facilitates language acquisition is the specially tailored and modified use of language and style of interaction by the primary caregiver which has been referred to as 'motherese' (Snow, 1995) or child-directed speech (CDS). Child-directed speech is characterised by the presence of shorter, simpler sentences with less complex grammatical structures. There is usually more repetition, exaggerated prosodic features and more questions and imperatives used (Gallaway, 1998). Although child-directed speech has been found to be culture-specific, it does also take place between deaf mothers and their young deaf children in sign language. However, the child-directed speech of hearing mothers of deaf children has been found to be qualitatively different from that of hearing mothers of hearing children or deaf mothers of deaf children. The most common characteristics identified in the research point to a more controlling, negative, simplified and inflexible style (Schlesinger and Meadow, 1972; Wedell-Monig and Lumley, 1980; Gregory, Mogford and Bishop, 1979; Meadow-Orlans, 1990). This is most often explained by the absence of an effective channel of communication between the mother and the child and by the mother's alternative efforts to ensure safety and to overcome communication barriers. The conclusion generally drawn from this body of research is that these characteristics result in a less facilitative language learning environment (Erting, Prezioso, and O'Grady-Hynes, 1990; Greenberg, Calderon and Kusche, 1984; Gregory, 1976; Lederberg, 1993).

Gallaway and Woll (1994) challenge these conclusions, regarding both the methodology and the assumptions upon which the research is based. They argue that any study of child-directed speech which focuses on atypical language learners, direct comparisons with same age hearing subjects are not appropriate. They suggest that the mother's adjustments in her language to the child are determined by the child's linguistic competence and that the communicative strategies used may be the only ones available to her. Gallaway and Woll

(1994) also argue that this type of research focuses on the negative aspects of child-directed speech in deaf/hearing dyads but ignores the potential benefits of the adjustment made by the mother such as supporting understanding and reducing the cognitive load on the child. A key assumption underpinning this body of established research is that simplified speech should not be a feature of a facilitative linguistic environment, whereas the actual effect of simplified speech for the deaf child might be appropriately supportive. Gallaway (1998) stresses that although the negative effects of increased maternal control have been assumed, the research does not provide conclusive evidence of this.

#### **1.4.3 Sign language development**

It is only since the recognition of sign languages as complete languages in the 1960s that linguistic research into sign language development has taken place. It has been established that the progression of development of sign language by deaf children mirrors the progression through the stages of lexical and grammatical development of English that hearing children follow in their spoken language development. This parallel development begins at the pre-linguistic stage with deaf infants displaying vocal and the manual babbling and thus engaging the parent in interactive turn-taking (Petitto and Marentette, 1991). The emergence of deaf children's first signs coincides with the emergence of hearing children's first words. The respective growth of their vocabularies and acquisition of syntactic structures also proceed at a similar rate (Woll, 1998).

In terms of the conditions for language development it has been found that those that are identified as favourable for spoken language development are also present in the sign language learning environment. Child-directed signing has been found to be adapted to the presumed linguistic capabilities of the child as is child-directed speech. Some of the features of child directed signing include signing on the child's body (Maestas y Moores, 1980);

shifting the signing space into the child's visual field (Erting *et.al.*, 1990) and the use of exaggerated, slower and simpler signs made closer to the child (Erting *et.al.*, 1990). It is also interesting to note that some deaf mothers do not necessarily use sign language exclusively with their deaf child. Research has shown that deaf mothers use a mixture of sign, speech or a mixture of both, often with an emphasis on spoken language up until the age of 1 year when children become more orientated to objects (Kyle, Ackerman and Woll, 1987; Mills and Coerts, 1990).

Research into sign language development provides evidence that deaf children can develop age-appropriate linguistic competence given the optimal conditions for language development. It must be stressed, however, that these findings are based on studies of deaf children of deaf parents who have been exposed to adult models of sign language since birth. It is still a fact that some deaf children do not have full access to either spoken or sign language at preschool age. If there is a critical period of language acquisition (Lenneberg, 1967) during which the innate mechanisms for learning a language are most tuned, there are likely to be significant consequences for deaf children in terms of their linguistic and cognitive development. Several researchers have argued that the individual's capacity for mastering a language diminishes around the age of 4 or 5 years (Kusche, 1985; Sacks, 1989; Mayberry and Eichen, 1991) after which time they are not able to catch up with either spoken or signed language. Woll (1998) argues that it cannot be so far assumed that deaf children of hearing parents will follow this pattern although some preliminary research suggests that where there is access to fluent sign language users from the age of 2 years onwards no significant differences are evident (Mayberry and Eichen, 1991).

There is also some research evidence which indicates that deaf children, like all children, are predisposed to developing an effective communication system and that this process is

inevitable regardless of the nature of the language exposure to the child. Goldin-Meadow and Mylander (1991) demonstrate that deaf children can develop a formally structured sign communication system without access to proper linguistic models. This research can be questioned on two main points. Firstly, there is no acknowledgement of the visual input to the children within and beyond the home which should be considered as modelling and secondly that the gestures identified by Goldin-Meadow *et al.* are not significant indicators of language development without adult input. However, these findings make a significant additional contribution to earlier research reporting that deaf children who are exposed to incomplete models of sign language, such as Manually Coded English, actually produce themselves a visual language which contains the characteristics of a natural sign language (Goldin-Meadow and Feldman, 1994; Gee and Goodhart, 1994).

#### **1.4.4 The language development of deaf children of deaf parents and deaf children of hearing parents**

This potential of the early use of sign language began to be explored through a significant number of research projects which compared deaf children with deaf parents (DCDP) with deaf children of hearing parents (DCHP). This body of research attempted to identify the relationship between early sign communication and academic and social achievement.

During this period of research a substantial body of evidence was collected which pointed to significant differences between the two groups in terms of intellectual and social functioning and in some cases literacy and receptive oral language skills. Some of the early landmark findings are summarised here:

- Quigley and Frisina (1961) found DCDP to have a superior English vocabulary and of finger-spelling skills but reported no differences in terms of speech reading skills.

- Stevenson (1964) reported a higher rate of entry to post 16 college among DCDP (38% of 134) compared to DCHP (9%).
- Stuckless and Birch (1966) reported superior reading levels, speech-reading and written language skills of DCDP among 38 matched-pairs.
- Meadow's (1968) similar study of 59 matched-pairs of DCDP and DCHP found the DCDP group to have superior intellectual and social functioning, and better scores in the domains of literacy, maths and finger-spelling although no differences were found in terms of speech-reading and speech production.
- Vernon and Koh (1970) also conducted a matched-pair study but unlike earlier studies controlled for aetiology of deafness by only selecting subjects with hereditary deafness. They also sought to be more specific about the classification of the two groups, in that they established that the DCDP had been exposed to sign language consistently since birth and the DCHP had been consistently exposed to oral communication since birth. Comparing the 32 matched pairs on a battery of tests, found that the DCDP outperformed the DCHP in the domains of written language, reading and vocabulary.
- Corson (1973) attempted to control still more tightly for the amount of manual input the individuals in his study received by categorising his sample into four groups;
  - Group 1. DCDP using manual communication and attending a TC school for the deaf
  - Group 2. DCDP using oral communication and attending an oral school for the deaf
  - Group 3. DCHP attending the TC school
  - Group 4. DCHP attending the oral school



Despite this more rigorous grouping 33 of the sample group of 40 had deaf siblings and only one child of the oral deaf parents had no deaf siblings. It cannot therefore be guaranteed that the deaf children of oral deaf parents in the oral school had no exposure to manual communication.

Corson found that the DCDP in both schools were significantly superior to DCHP in their reading, maths and speech-reading abilities. He also examined parental attitudes towards deafness and found that the deaf parents of both groups scored significantly higher in terms of acceptance of deafness. He concluded therefore that exposure to and use of manual communication in early childhood was not the only factor contributing to the children's superior performance but that parental attitudes should also be taken into account.

In terms of social development, studies involving deaf children with sign language skills in supportive preschool training programmes where parents have access to communication training showed children to be more competent in social interactions with peers (Greenberg, Calderon and Kusche, 1984; Henggeler, Watson, and Cooper, (1984). Studies which looked at deaf children of deaf parents found deaf children to have relatively greater social confidence and self esteem. This may be because the parents are more accepting and comfortable with deafness and because the normal interaction within the home prepares the children more successfully for situations outside the home (Gregory and Knight, 1998). In addition to this, the children will also have sufficient linguistic resources to deal with new social situations (Greenberg and Kusche, 1987; Luterman, 1987; Padden and Humphries, 1988; Schlesinger and Meadow, 1972).

Although these findings provide some evidence that the early use of sign language can have a positive effect on English language development, academic achievement and social

development there are several problems with this research. In the comparison of DCDP with DCHP the early use of sign language is only one of the factors which will influence a child's development. The variable of the acceptance or rejection of the deaf child within a hearing family remains an issue and one alternative explanation offered for the relative success of DCDP is the greater ease with which deaf parents are able to accept and accommodate the needs of their deaf children (Erting, 1994; Gregory and Knight, 1998).

Another significant difference between DCDP and DCHP concerns the aetiology of deafness. The cause of deafness for DCDP is more likely to be explained by hereditary or genetic factors rather than as a result of trauma following birth or a childhood illness.

DCDPs are therefore less likely to experience the resulting emotional or learning difficulties in addition to their deafness.

This area of research into deafness and development often focuses on comparisons between 'oral' with 'manual' children and this is usually the terminology used. This is also highly problematic for several reasons. In many of the studies the precise meaning of 'manual' is not at all clear. This term is used very broadly without precise definitions or descriptions of the actual language used in the home environment. The ambiguous use of this term could imply the use of sign language or a Manually Coded form of English such as SSE or sim-com. In addition to this, the use of the term 'oral' may only mean 'oral' in the classroom context and therefore the social use of sign language is not acknowledged or accounted for.

The most significant limitation of these studies is their research perspective. Much of this research was driven by the need to counter claims that early exposure to manual communication would have negative effects on the development of spoken language (Clarke, 1989). These studies therefore defend a position but fail to explore the potential, in

terms of the development of linguistic competence, that sign language presents for deaf children. Because the educational provision, which was the context for the studies, no longer exists these issues need to be considered in the current educational context.

### **1.5 Sign bilingual language development**

A few studies have attempted to provide a more objective view of deaf children's acquisition of language where both sign language and English are being learnt. This situation has more recently been described as bilingual or sign bilingual language development. The recently accepted use of the term sign bilingual in England, signifies at once the similarities and differences between deaf and hearing bilinguals. The use of the term 'bilingual' to describe deaf children suggests that deaf people do belong to the larger community of bilingual (hearing and deaf) people but to use 'bilingual' as the sole descriptor would be to place deaf bilingual people within a group where they do not comfortably sit. The use of the term 'sign bilingualism' makes the distinction needed between bilingualism involving two spoken and written languages and sign bilingual where there are two languages and three modalities (visual-gestural, oral-aural and written).

The use of the term sign bilingual recognises that either sign language or English may be a child's preferred language and that for some children written English may be more accessible than the spoken form because of the constraints that deafness places on the acquisition of English. It is also recognised that just as a mixed code is characteristic of all bilinguals communicating with other bilinguals, the use of a form of Manually Coded English is a normal component of deaf children's linguistic repertoire (Maxwell and Doyle, 1996).

The small number of studies which have attempted to explore sign bilingual language development provide some pertinent preliminary findings about the processes involved but most of the studies are small scale, case studies where findings cannot be generalised across the broader group of sign bilingual learners. In the review of these studies we are looking for evidence of the process of sign bilingual language acquisition in an attempt to respond to questions over whether or not sign language or English is most easily acquired and whether one language inhibits or interferes with the development of another. Also of interest is evidence of parallel stages of language development across both languages and evidence of equal competence in both languages across different domains of use.

#### **1.5.1 Deaf children of deaf parents**

Caselli (1987) reports on a longitudinal observation study of two deaf children of deaf parents from age 2.4 to 4.5 which explored the effect of early sign language acquisition on the development of spoken language. The parents of the deaf children used sign language with their children and oral input was received through the hearing grandparents, the nursery school and twice weekly speech training. They found that the development of the spoken language did proceed more slowly than that of the sign language and prior sign language acquisition was a necessary support for the development of spoken language. They conclude from this that early sign language acquisition does not prevent deaf children from learning vocal language but can support this process. These conclusions must be considered in the context of the findings about the higher levels of academic success achieved by deaf children of deaf parents in general.

Maxwell (1989) studied the use and development of speech in a deaf child of deaf parents from the age of 1.6 up to 7.5 years. The subject, Alice, was a profoundly deaf child, and a high achiever. For her deaf parents sign language was the preferred language. Maxwell was

particularly interested in the role of speech in this child's everyday life. Data came from the combination of monthly video recordings of Alice interacting with her family and from diary notes from the father.

Maxwell's findings provide further support for the argument that the development of sign language from an early age does not inhibit the motivation and interest in the learning of speech. Alice was interested in the speech around her and although she produced very little vocally up until the age of 4, by the age of 7.5, she demonstrated awareness of the different manual models of communication (sign, finger-spelling, sim-com) and switched accordingly. The longitudinal nature of this study allowed Maxwell to comment on these developmental stages and she notes that because Alice's speech abilities were slow to appear and then there was an explosion at school age. Studies on a more limited time scale would have come to very different conclusions. Maxwell stresses that even at age 7.5 Alice could not entirely depend on speech for communication without signing but she was able to learn through speech and interact freely using speech.

Maxwell discusses the limitations of a case study with regard to the difficulty of resolving questions about more general behaviour of deaf children who sign from an early age. In defence of this approach, Maxwell emphasises the importance of the accumulation of information gained from such studies and their eventual path towards a more reliable picture of general trends of language development. This discussion certainly reflects the overall style of research into this area and highlights some of the associated problems.

### **1.5.2 Deaf children of hearing parents**

Ahlgren (1994) conducted a project to explore the extent to which deaf children of hearing parents can develop age-appropriate levels of sign language. The question asked was can

such children develop sign language as a preferred language as deaf children of deaf parents do before the age of 3-4 years (when we normally expect hearing children to have acquired all the basic linguistic structures)? Unfortunately this project did not develop as was originally intended. Systematic comparisons were to be made between the linguistic, cognitive and social development of deaf children from hearing families with those from deaf families. In fact, this work with four deaf children (two with hearing and two with deaf parents) turned into an intervention programme from which only impressionistic findings are reported.

The intervention described took the form of an intensive sign language course for the hearing parents and this was followed up by observations of the children during normal pre-school activities. Ahlgren reports that by the age of two and three years, the developmental gap between the children with deaf and hearing parents had disappeared and that both children of hearing parents had reached age-appropriate levels of language. In this report there is no indication of the measures used to come to this conclusion and no detailed description of the children's language use. It is therefore difficult to accept this as reliable evidence or to allow for some generalisability with other similar groups of deaf children.

Collins-Ahlgren (1974) conducted a case study of a young deaf girl (16 - 44 months) whose hearing parents were reportedly fluent in ASL and English. The parents were said to have used ASL and English-based signs (with speech) in the earlier months. When the child had begun to use certain grammatical and semantic functions in ASL the parents began to introduce grammatical aspects of English such as inflections, articles and auxiliaries, through Signed English techniques. Expressive language samples were recorded and analysed to identify the stages of language development. Within the child's expressive repertoire there was evidence that the child was developing expressive skills in English

equivalent to her hearing peers. This conclusion was based on the fact that the child used a range of modes of communication often mixing aspects of ASL and English but that in doing this she demonstrated an awareness of some of the grammar functions of English. The child was able to communicate the grammar needed through the mix of ASL and English but this was a transitional stage to using the correct English structure following the intervention of her parents giving full English forms. A second conclusion was that the Manually Coded English used by the parents was beneficial in that it built upon the child's development of ASL skills and provided information about the structure of English.

### **1.5.3 Hearing children of deaf parents**

Studies of the bilingual language development of hearing children of deaf parents also have a contribution to make to our understanding of sign bilingual language development with regard to questions of interference, language separateness and parallel language development. Gregory (1994) conducted a study of the early language development of a hearing child in a sign bilingual environment where the father's first language was BSL and the mother's English. The child was exposed to the fluent use of both languages from birth and to situations where both language were used simultaneously through interpretation or interchangeability. The data presented in this study illustrated the parallel early development of universal features in both languages such as the use of babbling and the creative use of language. Also significant was the equivalent rate of language development and the absence of consistent dominance in either language. It is interesting to note that although signs and words were used simultaneously at the one word/sign stage, this ceased to be evident when the use of syntax began to develop. This relates to broader discussions of bilingual language development and the notion of whether children have a single language or two languages at the early stage (Romaine, 1989).

These findings are consistent with those from with other studies of hearing children of deaf parents with respect to the separate development of the two vocabularies and the complementary nature of the development of spoken and signed words for different purposes (Wilbur and Jones, 1974, cited in Israelite, Ewoldt and Hoffmeister, 1992, ) and evidence of parallel development of language universals such as babbling, (Prinz and Prinz, 1979). What is important to note from these studies is that they show that potentially sign language is as easy to learn as spoken language and that where equal access to both language exists the development of one language does not interfere with the other. However, these findings may not necessarily apply to deaf children for whom access to the full form of the spoken language is problematic.

The studies all provide evidence, although it is largely anecdotal, that in a sign bilingual language environment sign language and spoken English can develop in parallel where the potential for the child's spoken repertoire to develop exists. In such a language environment the child's language preference i.e. the language most easily acquired, is transparent although as with other examples of bilingual language development language choices are made according to the context and audience. Although the subjects studied demonstrate awareness of the separateness of the two languages systems, material from both languages was also mixed in order to fulfil communicative needs.

## **1.6 Social and emotional development**

Deafness has implications beyond language and communication which are significant in terms of general development and educational success. The importance of successful early interaction within the family for the child's social and emotional development has been explored in depth.



### **1.6.1 Attachment**

It is argued that deaf children of hearing mothers are less securely attached to their mothers than hearing peers. This is explained by the role of speech and hearing in the development of the bonding process. Some examples of this include a mother signalling in her verbal communication that she is temporarily leaving her child or an infant hearing and anticipating the mother's approach or return (Gregory, 1976; Schlesinger and Meadow, 1972). These important messages which, it is argued, can only be conveyed through speech are seen as significant for the child's developing security and understanding. Marschark (1993) argues that this research is anecdotal and not sufficiently evidence-based to be conclusive.

### **1.6.2 Independence**

A further consequence of the disruption to early interaction for social development which has been explored is independence. It is suggested that hearing parents' overprotection of their deaf children in the early years results in increased instrumental independence on the part of the child because of the decreased opportunities for gaining new knowledge and skills (Greenberg and Kusche, 1987). In social terms, this may manifest itself in an inability to physically look after oneself and to act independently which in turn effects educational achievement and social relationships (Meadow, 1976; Schlesinger and Meadow, 1972).

Traits of academic dependency reported by teachers include, deaf children's dependency on others for help and attention and an unwillingness to persevere with a problem on their own (Meadow-Orlans, 1990).

### **1.6.3 Impulsivity**

It has also been argued that deaf children develop an increased tendency for impulsivity (Harris, 1978). There are two possible explanations for this. The first of these points to the increased immediate response of mothers to their deaf child's needs (Gregory, 1976;

Lederberg, 1993), which relates to the issue of independence. The second explanation holds that deaf children miss opportunities for receiving explanations of behaviour and reactions of others, that is to learn from social interactions. They therefore lack experience of understanding other people's reactions and exploring their own emotional feelings. This might explain why deaf children generally experience difficulties in regulating their own behaviour by carefully considering the consequences of an action (Rodda, 1966).

All of these somewhat negative findings must be interpreted within their proper context. The majority of the studies reported here were conducted with children trained in oral communication programmes before sign language was considered to be a viable communication option. While these early studies of deaf children's linguistic and social development emphasise the potential disruption to early interaction caused by deafness they do not provide a full account of the linguistic and social potential of deaf children.

### **1.7 Intelligence and deafness**

Research into deaf children's cognitive functioning has focused largely on the quantitative and qualitative differences between deaf and hearing children in terms of memory and verbal and non-verbal cognitive skills such as problem solving and perception (Paul and Quigley, 1994). Very early research into deafness and intelligence in the period between 1940 and 1970 was conducted before sign language was recognised as a language and so deaf children were often considered to have no functional language. This research focused on the ways in which a language deficit (spoken and written language) affected cognitive development. At this time, deafness was considered as a natural experiment which could illuminate the relationship between language and cognition (Braden, 1994). This period and style of enquiry is referred to as 'deficiency research' by Moores (1987).

### 1.7.1 Deficiency research

This notion of deficiency is characterised by findings from the research of Pintner and colleagues (Pintner and Paterson, 1915; Pintner, Eisenson and Stanton, 1941) who reported that deaf people were intellectually inferior to hearing people, in that they demonstrated obvious defects in their verbal intelligence because of their lack of an internalised verbal symbol system. These findings added fuel to the wider debate of the time concerning the dominance of language over thought. It is interesting to note that even in this early research, findings regarding deaf people's performance on non-verbal tasks showed scores similar to those of normally hearing people (Myklebust, 1964; Pintner, *et al.*, 1941).

Moore (1987) and Paul and Quigley (1994) identify the work of Myklebust (1964) as a positive step forward away from consideration of deaf people as inferior to an examination of the qualitative differences between deaf and hearing people. Myklebust conducted a series of small studies involving tests of perception, memory, social maturity and personality. Myklebust proposed that deaf people's intellect was organised within a different structure which accommodated their lack of auditory stimulation. This proposal was based on his findings that deaf people performed in a similar way to hearing people on non-verbal, concrete tasks but he noted differences in the way deaf people performed on non-verbal tasks which required abstract thinking.

Despite the shortcomings of this research, namely the disregard for the subjects' sign language skills and assumption that only spoken language can facilitate the development of intellectual maturity, it influenced thinking and further research and engendered 30 years of continuing debate over whether or not there exists a psychology of deafness.

In contrast to this deficiency research, which is conducted and interpreted within a 'language dominates thought' paradigm, research which operates within a 'thought dominates language paradigm' finds deaf individuals intellectually and cognitively similar to hearing individuals (Paul and Quigley, 1994). Within this paradigm it is recognised that the differences that do exist between deaf and hearing individuals can be explained by the interaction between the demands of the research task and the linguistic and cultural implications of deafness.

### **1.7.2 Piagetian research**

The first research studies conducted from this perspective were influenced by the Piagetian theory which states that language does not precede or drive the development of thought or cognition but is in itself contingent on the development of cognitive skills (Piaget, 1968). The Piagetian model of the stages of children's cognitive development has been used as a framework within which deaf and hearing children's cognitive development has been compared (Piaget 1952, 1977). Deaf children have been found to develop normally through the 'sensori-motor' stage and through most of the 'pre-operational' stage (Furth, 1966; Greenberg and Kusche, 1987; Bond, 1987). It is towards the end of the 'pre-operational stage' that differences between deaf and hearing individuals begin to emerge. The most significant research findings about deaf children's cognitive abilities relative to the Piagetian framework are that in concrete tasks which require visual-spatial ability, deaf children's performance is equal to that of their hearing peers but that they demonstrate difficulties with tasks involving decentered thinking, namely, conservation of number, weight and quantity, length, area and volume (Furth 1973; Rittenhouse, 1987; Watts 1979).

Criticisms of this research have pointed to the language difficulties presented in the early tests of conservation abilities. Rittenhouse (1987) found that modification of the

instructions did improve the deaf children's results but that they still exhibited a 2 - 3 year delay compared to the hearing subjects. Another area of criticism raises the question of whether the studies aim to find out if deaf subjects can be successfully taught these principles of logic or whether they can discover the principles spontaneously. If deaf subjects can achieve these tasks through teaching is it not lack of experience or explanation which is being measured rather than inherent intellectual abilities? (Rodda and Grove, 1987). Finally the concern of the majority of these studies was to demonstrate that there can be cognitive development where there is limited language (spoken) and there was little acknowledgement of the individual's sign language skills. It is possible therefore that alternative problem solving strategies of deaf children with access to sign language during the early years of development were overlooked (Wolk, 1985).

### **1.7.3 Cognitive advantages and deafness**

Whether or not hereditary deafness might lead to some cognitive advantages has also been explored and it has been argued that genetic deafness might lead to comparatively higher levels of IQ (Kusche, Greenberg and Garfield, 1983). This argument is highly problematic as the group with higher IQ were deaf children of deaf parents and compared with deaf children of hearing parents. These higher IQ results could therefore be explained by the quality of parental communication and the higher expectations of deaf parents regarding educational success (Sisco and Anderson, 1980).

Zwiebel's (1987) research sought to clarify the relationship between familial deafness and intelligence. In his study of 243 children, all varying in the number of deaf family members, he found that deaf children with deaf parents or deaf siblings scored higher in intelligence than deaf children with hearing parents and siblings. It is important to note from these findings that genetic background made no difference to the intelligence scores as the deaf

children with hearing parents but deaf siblings (suggesting genetic deafness) did not differ from deaf children with all hearing families. Zwiebel's conclusion from this was that gains in cognitive development can be explained by the language environment rather than by genetic background. These findings reflect the outcomes of related research into reading and writing which indicates that intensity of language use, regardless of modality leads to the best cognitive performance.

Braden (1994) reviewed over 200 studies into deaf people's intelligence and concluded that 'when language demands are minimised but cognitive demands remain stable, deaf people appear to be somewhat delayed but generally similar to their hearing peers' (1994, p. 8).

Braden (1994) argues that the lower verbal IQ scores of deaf children can be explained by their lack of experience of this type of problem solving rather than a deficit in their verbal reasoning processes. The remarkable finding reported by Braden is that deaf children of deaf parents have performance IQs above the mean for normally hearing children. That DCDP should outperform DCHP in this area can be expected because of early exposure to sign language, increased acceptance of deafness and reduced incidence of additional difficulties. Why they should outperform hearing children in this area raises a number of issues about the effects of deafness and also the methodology of the study. In answer to these issues Braden argues that these results do not reflect test bias, the existence of compensatory skills of DCDP or problems with the experimental methods, rather they point to a need for more research into genetic and environmental effects on intelligence.

The central message to be drawn from this research is that there exist differences in the processing strategies employed by deaf and hearing children which lead to advantages and disadvantages in different areas. The most notable of these is memory and integration of both verbal and non-verbal information exemplified through research into literacy

development and non-verbal intelligence scores. One of the most significant examples of research into such cognitive strengths of deaf children focused on the question of whether or not development of language in a spatial medium leads to enhanced spatial cognition in deaf children (Bellugi, O'Grady, Lillo-Martin, O'Grady-Hynes, van Hoek and Corina, 1994).

Based on the premise that although sign languages are based on similar organising principles to spoken languages and exhibit the formal structuring at the same level, the modality in which the language is expressed is bound to offer different possibilities in terms of deaf children's spatial cognitive development. This study focuses particularly on the way in which spatial location is used in sign language to convey linguistic information and on young deaf children's developing spatial framework. The study involved the analysis of deaf sign language using children's performance on visual tasks requiring spatial construction, perception and organisation and a comparison of results with hearing counterparts. It was found that deaf children's spatial abilities were enhanced in some aspects of spatial cognition particularly in their ability to attend to, remember and analyse spatial displays involving movement patterns. This enhancement of spatial abilities seemed also to have a lasting effect into adulthood

#### **1.7.4 Problems with research into intelligence**

Much of the earlier research into deafness and cognition must be interpreted with caution because of its methodological weaknesses. The research instruments, psychological tests and experiments used, even those which were supposedly non-verbal tests were designed for hearing subjects whose preferred language is a spoken and written one. Although test administration can be adapted to give deaf subject equal access to the task the premise upon which they are designed and the criteria upon which they are judged relates to perceived

norms for hearing children. Therefore, however accessible they are made they should not be considered as fair measures of deaf children's knowledge and cognitive skills.

Areas of cognitive development which have been researched more recently and where we can be more confident of the findings include neurological processing, IQ and short term memory. MacSweeney (1998) reports that although there may be differences in deaf and hearing subjects' neurological processing of language and short term memory strategies, IQ measures of intelligence demonstrate that deaf children have the same cognitive potential as their hearing peers. The important factor which has been identified by many other researchers is the early establishment of a first language, regardless of modality (spoken or sign).

## **1.8 Deafness and school achievement**

Where cognitive ability is explored in isolation from deaf children's proficiency in school areas of learning few real differences between deaf and hearing subjects are found. This body of evidence indicates that deafness in itself does not inevitably result in limited intellectual ability or deficiencies in (Braden 1994). Where, however, specific areas of learning such as literacy and numeracy are considered more significant differences do emerge.

### **1.8.1 Reading and deafness**

One of the consequences of deafness is the impact on the development of preferred language skills, i.e. spoken or sign language which has been discussed earlier in this chapter. The implications of this are far reaching in social, emotional and academic terms. If we now



look at the academic consequences the skills most essential for successful educational attainment are reading and writing.

Hearing children of school age approach reading with a secure knowledge of the grammatical structures and vocabulary of the language they are reading, whereas deaf children are confronted with a task involving the deciphering of printed words which represent a linguistic code with which they may not be fully familiar. Learning to read for a deaf child is often equated with learning a complete new language (Paul, 1998). As discussed earlier in this chapter the use of hearing aids or cochlear implantation can not fully compensate for hearing loss and provide the same experience of speech reception as for a normally hearing child and so as spoken language development is inevitably disrupted so is the development of the secondary skills of reading and writing.

A minority of deaf children do achieve levels of linguistic attainments commensurate with their hearing peers (Powers, Gregory and Thoutenhoofd, 1998) but the reading abilities of deaf children more generally are a continued cause for concern regardless of teaching methods or educational approach (oral-aural, Total Communication, sign bilingual). A substantial number of large-scale investigations have shown over the last 20 - 30 years that standardised reading tests indicated that deaf students typically leave school with a reading age of only 9 - 10 years ( Paul and Quigley, 1994; DiFrancesca, 1972; Trybus and Karchmer, 1977; Conrad, 1979; King and Quigley, 1985; Allen, 1986). Marschark, (1993) reports that more than 30% of deaf school leavers are functionally illiterate compared to 1% of their hearing peers. This is a continued concern as more recent studies have yielded similar outcomes and suggested that reading scores are not improving (Marschark and Harris, 1996; Paul and Quigley 1994). Deaf children's difficulties with the development of

literacy skills have been examined in terms of vocabulary knowledge, syntactic understanding and phonological awareness.

### *Reading vocabulary knowledge*

Vocabulary knowledge is one of the most important components of the reading process and the development of a rich lexicon is dependent on the early language environment. Deaf children often demonstrate an impoverished breadth of vocabulary knowledge as a result of limited early language experience (spoken or sign language), knowledge of the world and insufficient access to explained experiences (Paul, 1996). This is compounded by the fact that they then find it more difficult to learn new words from the written context because they are limited by their impoverished vocabulary, comprehension and range of reading strategies (de Villiers and Pomerantz, 1992).

### *Syntax*

The grammar of a language is acquired as children develop spoken language skills in their early life (Pinker, 1994) and this understanding is an important predictor of later reading skills. Deaf children are not always familiar with the grammar of the language they are reading. Research demonstrates marked deficits in the comprehension of syntactic structures compared to their hearing peers and a review of this research by Paul and Quigley (1994) indicates that the gap between deaf and hearing children's comprehension of different syntactic structures can extend to as much as 10 years. Given these difficulties, deaf children are compromised as they cannot use their knowledge of the syntax of English to infer or to guess the meaning of unfamiliar written words or sequences.

### *Phonological coding*

Phonological coding is the ability to recognise grapheme-phoneme relationships or spelling-articulation relationships. Phonological coding is the utilisation of a speech-based code in working memory which is a significant cognitive ability related to reading achievement. The use of this speech-based code in working memory allows readers to temporarily store strings of letters while phonemically assembling a word or store clauses or parts of text while their relationship to the whole is constructed (Baddeley, 1986). These skills are considered to be a pre-cursor to early reading development in hearing children and children with poor phonological skills often show poor levels of reading achievement (Bryant, 1991). Awareness of phonological structures includes awareness of individual syllables and phonemes but phonological skills also include the perception, retrieval and memorisation of phonological information. Several longitudinal studies have shown that oral rhyming and alliteration games played with very young children provide the foundation for the development of these skills (Bryant, 1991). It is likely that for many deaf children these oral games and rituals will not take place.

Because of the link with spoken language, song, rhyme etc. phonological skills have often been assumed to be beyond the reach of some profoundly deaf children. More recent research suggests however that phonology may not rely exclusively on auditory experience for its development. Hanson (1991) argues that units of language are not necessarily sound based and that visual experiences such as lip-reading, reading and gesture may also give information about phonological segments of a language. There is evidence to suggest that deaf children with good literacy skills do demonstrate the use of some phonological skills (Leybaert, 1993) although this remains to be proved for all deaf children rather than just those with high levels of linguistic competence in sign language and English.

The phonological system of deaf individuals has been shown to have different characteristics from that of hearing individuals as a result of their reliance on a visual representation of phonological contrasts of language. Their phonological representation of the language system will be different from that of hearing children because their source of information only provides partial information. They also will be heterogeneous in their sensitivity to phonological information depending on hearing loss, use of speech and reading ability.

Studies into the relationship between phonological recoding and working memory have shown that deaf individuals, whatever their preferred language, demonstrate smaller working memory capacities than hearing individuals (Campbell and Wright, 1990), but that they may use other phonological coding strategies (MacSweeney, Campbell and Donlan, 1996). Studies into this area have indicated that some deaf readers favour a written connection to the phonological form (Campbell and Wright, 1990) whereas others may use phoneme-to-grapheme mappings (for spelling) but start from inaccurate rules (Burden and Campbell, 1994). The finding that the development of phonological skills is not dependent on hearing a language but on having intensive language exposure in any modality is a significant development in the area of reading research (Sterne, 1996).

It is important to stress that it is difficult to accurately separate out the different components of reading and attach more importance to any one particular area. For example, difficulties interpreted as due to a lack of syntactic knowledge could be confounded by verbal short term memory strategies (Lillo-Martin, Hanson and Smith, 1991). A limited verbal short-term memory may obstruct deaf children's ability to see a more complex structure as a whole and place syntactic order on it. Similarly, claims about deaf children's phonological processes need to avoid being confounded by the debate around the different sources of phonological information (Marschark and Harris, 1996).

There is some evidence to suggest that deaf children of deaf parents are more proficient readers than deaf children of hearing parents (Kampfe and Turecheck, 1987; Brasel and Quigley, 1977, Vernon and Koh, 1970) although they are still inferior readers compared to hearing children. This has been explained by the advantage this group have of having an internal language base which allows them to store and apply new academic knowledge (Braden, 1994). The results of this research have to be interpreted with caution as firstly, the results remain uncorroborated by larger-scale research projects and secondly they do not automatically point to the superiority of a sign language over a spoken language environment. A longitudinal study by Harris and Beech (1998) of 24 five year old deaf children's reading development showed that amongst the individuals with and without sign language skills there were very contrasting profiles of scores. Harris and Beech conclude from this that deaf children can become successful readers via more than one route.

Most of the research into reading is confounded by the difficulties of controlling for educational experience, type and degree of hearing loss and parental education and expectations. The improved performance of deaf children of deaf parents can be explained by a number of factors other than early exposure to sign language, most importantly, the intensity of the child's language experience at home i.e., the amount of time parents spend communicating with children (Kampfe, 1989). Consistent linguistic input, regardless of language type, has been shown to positively affect academic and cognitive outcomes (Lou, Strong, and DeMatteo, 1991). In addition to this, it is argued that the more secure emotional adjustment of deaf children of deaf parents (Corson, 1973) may account for their superior performance in literacy and indeed other areas of the curriculum.

It can be surmised that difficulties in learning to read are the result of a lack of linguistic competence in any medium (Conrad, 1979; Marschark, 1993; Paul and Quigley, 1994) and

that an educational priority must be to enable the child to establish linguistic competence in whichever language is appropriate rather than to assume that reading success must rely solely on the establishment of spoken language skills.

### **1.8.2 Writing and deafness**

Deaf children's attainments in the domain of writing reflect their difficulties experienced with the reading process. The most significant areas of difficulty frequently reported are deaf children's limited written vocabulary and insecure grasp of written English syntax (Paul and Quigley, 1994). For any child, learning to write involves complex metalinguistic skills as children need to recognise the relationship between spoken and written language and be able to distinguish between the two modes and learn the conventions typically associated with the written word (Halliday, 1985). For a deaf child, writing involves learning to manipulate a new linguistic code which is based on a spoken language to which they only have limited access. The focus of attention has been largely on deaf children's errors in their writing and these have been catalogued extensively. Some typical errors occur in incorrect use of word order, omission of function words and omission or incorrect use of inflectional morphology such as plurality, verb agreement or tense (Lichtenstein, 1998).

It is a concern that, as with research into the reading process, the majority of research into deaf children's writing fails to identify their linguistic skills and capabilities. It has been established that deaf children's writing is not a reflection of their manual communication skills (Everhart and Marschark, 1988), nor is it an indication of their general cognitive abilities (Yoshinaga-Itano and Snyder, 1985). Marschark points out that these findings suggest that deaf children are capable of achieving literacy success and this is good cause to question the research and teaching approaches.

A small number of small studies have considered deaf children's writing from a different perspective in that they have sought to identify what is different about their writing abilities and whether these differences are specific to deaf children (Gregory, 1997; Charrow and Fletcher, 1974; Baker, 1994; Goldberg and Bordman, 1975). This perspective considers that deaf children's errors may be explained by the influence of British Sign Language on their writing and hence provide evidence of an attempt to create their own structures using a language that they already know (Gregory, 1997).

Most research into deaf children's attainments in reading and writing points to the difficulties of learning to become literate without an established spoken preferred language. The reading and writing processes are viewed from a 'hearing perspective' and the composite skills involved are analysed regarding the difficulties that deaf children encounter at each stage. Although a few studies are emerging which re-consider the reading and writing process from a deaf child's point of view and examine the role of sign language in this process (Gregory 1997; Strong and Prinz, 1997), there is still a need for more information about the different strategies and skills that deaf children employ and could be encouraged to develop to enable them to become more successful readers and writers. The importance of language awareness has begun to be considered in this area of discussion but not systematically investigated (Paul and Quigley 1994; Strassman 1997; Hoffmesister, 1994).

The implications of deaf children's poor attainments in the domains of reading and writing have far reaching social and academic consequences. While literacy is at the centre of the school curriculum, deaf children's access to and success in other subject areas is likely to suffer. Literacy skills are also an essential passport to social interaction, independence and eventually career opportunities. Without these skills the deaf school leaver is essentially

marooned and often faced with the prospect of continued education in basic skills rather than with positive career choices.

### **1.8.3 Mathematics and deafness**

Only a relatively small number of research studies have focused on deaf children's mathematical abilities by comparison with the body of research into language and literacy. In many of the studies the mathematics scores given are presented as one aspect of measurement of general educational achievement and not as information about maths attainment and learning processes *per se*. These studies indicate that deaf learners do, in general, lag behind their hearing peers in terms of maths achievement by between 2 - 3 years, (although not to the extent that they do in reading) but that this delay cannot be explained by school placement, gender or degree of hearing loss (Wood, Wood, Griffiths and Howarth, 1986; Allen, 1986; Luckner and McNeill, 1994; Titus, 1995; Kluwin and Moores, 1989). Problems associated with many of these investigations is that mathematics ability is normally assessed through English and it is therefore difficult to clearly ascertain what the subjects' real abilities might be if these access difficulties were removed.

Gregory (1998) argues that difficulties that deaf pupils experience with mathematics can be in part explained by the technical and specialist language of mathematics; the level of reading ability required to access mathematical problems and early experience of conversations about number and mathematical ideas in the home environment. Since many deaf children will not be able to benefit fully from this introduction to mathematical concepts through spoken language, the potential of sign language, which conveys information about size, location and spatial relationships remains to be explored. Current research and development work is taking place which considers the effective teaching and assessment of mathematics in a sign bilingual context. This involves scrutiny of the language



of maths and investigating ways in which sign language can be facilitative in enabling deaf learners to recognise and interpret maths terminology and develop mathematical capabilities based on their language strengths as bilingual learners (Gregory, 1998).

**1.8.4 Formal examination success**

GCSE examination success is perceived as one of the most significant indicators of school achievement and yet national statistics for deaf pupil performance at this level have not yet been collated. Although data is available on deaf pupils in special schools (Powell, 1995), it is neither representative of the full school population of deaf children, or detailed enough for firm conclusions to be drawn about the relative success of pupils in oral-aural and TC programmes. More comprehensive data presented by Powers (1998) reports GCSE results of deaf students in mainstream education along with other measures (linguistic, audiological and social) pertaining to educational achievement. Powers presents the following data for 1996 exam results of this cohort of deaf students in England.

	Pupils achieving 5 or more A - C grades %	Pupils achieving 5 or more A - G grades %
Year 11 deaf pupils in mainstream schools (n = 403)	18	75
England Average (all schools) 1996	45	86

*Figure 4. 1996 examination results of deaf students in mainstream education*

(from Powers, 1998, p. 230)

When these results were analysed according to pupils’ degree of hearing loss this factor was not found to be significant. The strongest predictors of exam success were age at onset of deafness, the socio-economic status of the family and the presence of additional learning

difficulties. The hearing status of the family and the language used in the home were found to be significant but to a lesser degree. In discussion of these results Powers stresses the importance of considering exam results in the broader context which takes into account base-line measures, and other indicators of school effectiveness. What is clear from this and other studies of pupil achievement in the UK and the United States is that attempts to identify and isolate causal factors such as type of placement, mode of communication offered or hearing status of parents are, in general, not reliable (Lynas, 1986; Kluwin, 1993; Ritter-Brinton, 1993).

### **1.8.5 Problems with research into educational achievements**

Most of the research into the implications of deafness for language development and general educational achievement has so far been conducted with groups of deaf children within oral-aural educational settings and these results are often generalised to all deaf children. This research is largely undertaken from a perspective which considers deaf children as hearing children with a sensory deficit. The underlying goals of much of this research is to identify deaf children's delay and difficulties as compared with hearing children. Very few aspects of this research refer to sign bilingual deaf children or point to positive cognitive differences or learning strengths. Deaf children's potential as learners given access to a strong first language is therefore not addressed by much of this research.

Another problematic issue which arises from the research into language development as well as educational achievement centres on problems associated with the use of terminology. The terminology describing children's language use, and the use of language in the educational and home context is not consistent which makes the interpretation of some of the research difficult. In some instances the varying use of terminology reflects disagreement and debate

within the field of deaf education, whereas in others it is a result of the differences between the British and American educational systems and approaches to measuring achievement.

Finally, the methodological weaknesses of many of the studies which are considered to yield significant findings must be recognised. Studies involving deaf children generally only consist of a small number of subjects and it is therefore difficult to apply findings more broadly or to draw general conclusions. In addition to this, many of the studies look at children's current levels of performance or linguistic development and attempt to interpret the results retrospectively rather than plotting development longitudinally. A longitudinal element would allow for factors contributing to language development and educational achievement to be more carefully identified and monitored. Powers, Gregory and Thoutenhoofd, (1998) point out that a further issue is the lack of appropriate tests for deaf children, particularly for those with sign bilingual skills.

## **1.9 Conclusion**

One of the most significant conclusions to be drawn from this body of research into deafness and language development is identified by Marschark (1993) as the evident linguistic resilience of deaf children despite the linguistic conditions that deafness imposes upon them. Most deaf children do develop a means of communication even though deaf children of deaf parents are in the minority and most deaf children do not enjoy the normal and relaxed process of language development experienced by most hearing children. Whether or not the early development of sign language leads to consistent facilitation of learning an oral and written language remains inconclusive although we can certainly conclude that this intervention does not impede spoken language or literacy development.

The research also highlights that the impact of deafness beyond audition and language should be considered including wider academic achievements and social development.

The most significant recent research outcomes relate to an increased understanding of sign language and its development. Notably, that the sequence of development of children's sign language appears to reflect that of spoken language development and that deaf children can become linguistically competent given the right language learning conditions. It is these findings which are enabling research to move forward towards the identification of deaf children's strengths and different developmental paths and styles of learning. Research of this nature provides constructive support for professionals who are attempting to provide appropriate and effective educational support.

As our understanding of sign language and the linguistic potential of deaf children has increased approaches to the education of deaf children which include some element of sign language support are on the increase. Sign bilingual education is one such developing area which requires more research to be forthcoming regarding the nature of sign bilingual language development. Educational practice in this area is developing without a sound pedagogical model and the purpose of this exploratory study is to contribute to the development of such a model.

The following chapter will firstly examine the rationale which underpins sign bilingual education and then review developing practices and the reported educational outcomes. Some theoretical and pedagogical problems will be identified which lead to the empirical part of this study.

## **CHAPTER 2. SIGN BILINGUALISM AND EDUCATION**

### **2.1 Introduction**

Investigations into the language development of deaf children who use sign language and English straddle the two educational contexts of special educational needs and bilingual education. The constraints that deafness places on spoken language development and educational achievement, discussed in Chapter 1, present some deaf children with particular learning needs in the domain of language and literacy which have to be addressed within a special educational needs framework. This perspective has dominated the consideration of deaf people which has, up until recently, focused on deafness as an impairment and hence on their disability not on their linguistic status. However, because many deaf children approach the educational context learning the two languages of British Sign Language (BSL) and English, some of their learning needs can also be considered within the context of bilingual education.

In the context of this study, sign bilingualism describes an approach to the education of deaf children which involves the use of BSL and English, where the goal is linguistic competence in BSL and English (spoken and/or written). For most deaf children, the two languages of BSL and English are present in their everyday lives and both languages will be used for different purposes in different contexts.

The group of children are described in this study as sign bilingual. It is argued that most deaf people are bilingual to some degree, although individual language preferences and areas of strength will vary (Kannapell, 1993). However, it is only since the recognition of

BSL as a naturally evolved language (Brennan, 1976) that deaf people have begun to be described as bilingual. A lot of the academic literature therefore theoretically explores the status of sign bilingualism rather than reports on research findings. Much of this body of literature attempts to explore and define sign bilingualism within the framework of hearing bilingualism. This approach illuminates differences but does not result in any insights into the nature and course of sign bilingual language development. There is therefore a need for a closer examination of sign bilingualism

In this chapter the phenomenon of sign bilingualism will be discussed in detail and the similarities and differences with hearing bilingualism explored leading to a synthesis of our current understanding of the nature of sign bilingualism. Research into sign bilingual education will be reviewed including current practice and the reported outcomes. Educational issues will be identified, particularly regarding literacy development, which will be further explored in Chapter 3.

## **2.2 Similarities and differences between spoken and sign bilingualism**

Grosjean (1992) discusses the similarities and differences between deaf and hearing bilinguals. He locates this discussion within a definition of bilingual which includes people who use two languages regularly in their everyday lives (spoken/written or signed) but who do not necessarily have native-like fluency in each. The similarities that he identifies focus on the diverse nature of each person's bilingualism and their functional use of language in different situations. Grosjean argues that deaf people, like hearing bilingual people, develop varying degrees of competence in their languages depending on the accessibility of the spoken language through audition, childhood experiences of language use, educational context as well as employment and social domains. This overview presented by Grosjean,

demonstrates the similarities between deaf and hearing bilinguals exist largely at a superficial level. The shared characteristics described can only be applied in global terms but once a more in-depth study of sign bilingualism is undertaken then immense differences in terms of patterns of language use and development become apparent. A closer examination of individual language dominances and preferences provides a starting point for the discussion of these differences.

### **2.2.1 Language preferences**

The notion of language dominance has recently been applied to bilingual deaf people in discussions of individual language preferences (Grosjean, 1992; Kannapell, 1993). This discussion exemplifies some of the differences between deaf and hearing children's bilingualism. In a current model of sign bilingualism it is recognised that there are different paths to bilingualism and that individuals will have different language dominances (Pickersgill and Gregory, 1998). At one end of the spectrum are those for whom sign language is a preferred language, in that it is the most easily acquired, the most fully accessible and least restrictive vehicle for learning and continued cognitive development. For this group, the domain of speech may never be accessible or become a fully acquired skill, whereas for hearing bilinguals, the spoken form of the language is normally acquired as a primary skill.

At the other end of this spectrum are those who have sufficient auditory perception to acquire spoken language as the preferred language but who have the necessary sign language skills to communicate with deaf adults and peers. Decisions about school placement must therefore take into account the individual's functioning in both languages in the academic and the social setting. Whilst language dominances can also be described regarding bilingualism in two spoken languages the reasons for dominances in one or other

language are likely to relate to the contexts in which the two languages are learnt and used. For deaf children, the added factor is the lack of full access to a spoken language due to a sensori deficit rather than environmental or contextual circumstances.

### **2.2.2 Language modalities**

A second factor which sets sign bilingualism apart from spoken language bilingualism is the modalities of the languages involved. The term modality refers to the medium in which a language occurs. Sign bilingualism involves two languages but three modalities. Sign language exploits the visual-gestural modalities and spoken language exploits the auditory-oral modalities but also has a visual-graphic modality.

In most examples of bilingualism, both languages share a spoken and a written modality although there are cases of bilingualism where both languages share a spoken modality but not a written form, particularly minority languages (Gregory, 1996). In these bilingual situations there is still a common modality in that the primary mode of each language is the spoken form and the learning of the spoken form of the second language will at one level reflect the processes involved in the learning of the spoken form of the first language. These bilingual learners also have the support of the spoken form of the second language in their learning of its written form. In sign bilingualism there is no common modality since the primary form of each language differs and because BSL has no established written form.

Because these three modalities exist, sign language can be simultaneously combined with the spoken language and this is referred to as bimodal language use. In an educational context, sign language and spoken language are usually intentionally combined with the goal of making the spoken language more accessible. There are a number of manually coded forms of English (MCE) which all involve using signs and features from BSL alongside



spoken language to support the representation of English. Although these sign codes have been developed to represent English they do not constitute full languages as neither BSL or spoken English can be fully represented using this mode of communication (Johnson, 1992; Maxwell, 1992).

### **2.2.3 Bilingual and bimodal language use**

This unique phenomenon of sign bilingualism sometimes blurs the distinction between bilingual and bimodal education for deaf children. A bilingual learning environment for a deaf child may consist of exposure to sign language and to one of the English-based sign systems or exposure to sign language and to spoken or written English. Exposure to oral English and one of the signed systems would not be a bilingual situation but a monolingual situation even though a sign code is being used (Paul and Quigley, 1994).

This presence of three modalities and the frequent use of English-based sign codes also results in very particular examples of language mixing which are unparalleled in hearing bilingualism since it is possible to sign and speak at the same time. Although there are many examples of how hearing children mix material from both spoken languages only one modality is involved (Romaine, 1989). For deaf individuals, contact between English and sign language results in features from a visual-gestural language and a spoken language being mixed resulting in what is sometimes labelled as contact sign (Lucas and Valli, 1992) or Pidgin Sign (Pickersgill and Gregory, 1998; Powers, Gregory and Thoutenhoofd, 1998). These terms describe the use of sign language which includes elements of both BSL and English as a result of contact and interaction between deaf and hearing people. Pidgin Sign and Pidgin Sign English describe the contact variety where predominantly BSL or English features respectively are retained. The use of Pidgin Sign by deaf people usually occurs as the result of efforts to accommodate hearing people's receptive sign language skills. The

use of Pidgin Sign English by hearing people is more likely to reflect the limitations of their signing abilities.

It is important to recognise the distinction between this type of language mixing and the use of manually coded forms of English. Maxwell and Doyle (1996) point out that language mixing should be seen as distinct from bimodalism where some aspects of sign or speech become redundant. Language mixing of the children in their study did not reflect bimodal communication in that sign was not used as a fragmented accompaniment to speech and grammatical features and key information were not repeated in both modes. They argue that language mixing by deaf children shares the characteristics of that of hearing children in that it is the result of the children's creative use of their linguistic resources to serve their communication goals.

The issue of modalities is interesting to educators who are concerned with deaf children's development of linguistic competence in both sign language and English. The presence of the three modalities confounds the application of educational principles for hearing bilingual children to deaf children regarding the teaching and learning of English as a second language. The notion that the child's established preferred language can provide a foundation for the learning of the second language (Baker, 1993) is complicated by this lack of a common modality in which BSL and English occur. Children who are moving between sign language and written/spoken English are moving between two languages with very different structures. Isham and Lane (1994) highlight these differences, from an interpreting perspective, in their discussion of whether or not there exists a non-linguistic conceptual code that mediates between the two language repertoires. The main differences that they highlight between English and ASL include:

- ASL verbs do not specify tenses as English verbs do through word endings such as 'ing' or 'ed'.
- The passive voice which does not require an object in English ( *He was sacked this morning* ) is not specified in ASL although the equivalent meaning would be described in a different way.
- The marking of grammatical categories in ASL can take place through non manual (non-segmental) means such as body movement or eye gaze as well as segmental means.
- The expression of subject - object relations is signified through inflections in ASL and not through the order of signs as it is in English through word order.
- The topic of an ASL phrase is usually placed before the subject, and OSV structures are common, unlike English which favours SVO structures.

These identified differences apply particularly to English and BSL or ASL but other spoken languages, such as Chinese, may share more similarities with sign language.

Neuroth-Gimbrone (1998) stresses the need to restructure our thinking about bilingualism with regard to deafness because of the different modalities in which sign language and English occur.

(.....) bilingualism in deaf education requires not only learning another language, but also crossing the modality, the basic medium in which the language occurs (Neuroth-Gimbrone, 1998, p.12).

She proposes the use of formal approaches to language teaching where sign language is used to discuss the spoken language and the use of translation is included in the teaching process to provide a bridge between the two modalities. Several other educators and researchers in this field are exploring this avenue in an attempt to find alternative means of exploiting the children's stronger language of ASL in their learning of the second language although detailed reports of processes and outcomes are sparse (Mahshie, 1995; Neuroth-Gimbrone and Logiodice, 1992; Akamatsu and Armour, 1987; Bouvet, 1990). The goal of the empirical aspect of this study is to contribute further to these findings and this body of research will be reviewed in Chapter 3.

## **2.3 Theories of bilingual cognition and sign bilingualism**

Studies into the psycho-linguistic nature of sign bilingualism and the language processing involved are almost non-existent. As a result of this there is no clear hypothesis presented for how the two languages of sign language and English are represented in an individual's mind. Linguists researching bilingualism in general are interested in the conceptual representations of the surface form of the two languages and how they are stored. The questions posed are: do two separate conceptual stores for each language exist or is there one non-linguistic or translinguistic conceptual store? There are research findings that support both hypotheses (Romaine, 1989). Some of the research into the interpreting process explores this question in relation to sign bilingualism. In a study of the process of simultaneous interpretation Isham and Lane (1994) conclude that reliance on two separate stores for each language, that is simple lexical equivalents would interfere with the process of simultaneous interpretation and that there must be a non-linguistic code that mediates between the two language repertoires. More understanding is needed of deaf children's representation of the two languages of sign language and English but in the context of this

study it is their awareness of language as a system of representation itself which is of interest.

## **2.4 Towards a model of sign bilingual education**

The few isolated studies of deaf children's sign bilingual language development (reported in Chapter 1.) do not by themselves provide a very substantial body of evidence to support the development of a bilingual educational model but they provide some information about the language learning processes. However, when these studies are considered alongside the research into the academic achievement of deaf children of deaf parents a strong case for sign bilingual education begins to emerge.

### **2.4.1 The reported advantages of the early acquisition of sign language**

Early research into the achievements of deaf children of deaf parents indicated higher levels of success of these children in terms of language, academic achievement and social development (Stuckless and Birch 1966; Meadow 1968; Vernon and Koh 1970; Zwiebel 1987.) The implications of these early findings required professionals to seriously consider the educational use of sign language as a means of enabling deaf children to achieve levels of language development, social development and academic achievement. The early experience of sign language has also been found to be facilitative in the learning of English as a second language (Charrow and Fletcher 1974; Brasel and Quigley, 1977; Meadow, 1968) rather than to interfere with or inhibit its development.

### **2.4.2 The proven legitimacy of sign languages**

The sign bilingual educational movement is further strengthened by the proven legitimacy of sign languages as natural languages. Research into sign languages has proved that they are

rule governed, share similarities with each other and with other spoken language and possess an identifiable developmental sequence (Stokoe, 1960; Klima and Bellugi, 1979; Brennan, Colville and Lawson, 1980). This body of research confirms that sign languages are not derived from spoken languages and are not gestural or mime systems where each sign corresponds to a word in the spoken language

The research into the studies of acquisition of sign indicates that the stages of acquisition of sign language in DCDP correspond to the development stages that hearing children progress through in their acquisition of spoken languages. Parallels are reported in terms of :-

- the development of semantic relations, that is similarity of vocabularies being acquired and rate of vocabulary acquisition (Bellugi and Klima 1972; Hoffmeister 1978)
- the acquisition of certain syntactic structures such as the development of negation (Deuchar 1987); morphological processes (Klima and Bellugi 1979; Wilbur, 1979); and phonological units of handshape, direction and orientation of sign (Woll, 1998).

These studies demonstrate that the cognitive processes involved in learning a sign language are at the same level as those required in the learning of a spoken language, further refuting the notion that sign languages are iconic and concrete. Pettito's (1987) research into the parallels between signed and spoken acquisition led to a proposal that modality is not the key component of language input but instead the structure and patterns within the modality to which young language learners are sensitive. This research explains why children's development of sign language progresses through the same milestones at the same times as that of spoken language despite the difference in modalities.

### **2.4.3 The achievements of deaf children in oral-aural approaches**

The poor achievements of deaf children in oral-aural approaches provided a further impetus for the introduction of sign language in the education of deaf children. The goals of education for deaf children have in general not been realised. There is little evidence of success of oral-only education in promoting fluent spoken language and age-appropriate literacy skills in deaf children (Conrad, 1979; Babbidge 1965; DES, 1968; Powers, Gregory and Thoutenhoofd, 1998). One of the most significant studies to be carried out was by Conrad (1979) of 468 deaf school leavers (ages 15-16 years). On tests of reading comprehension he found their average reading age to be between 9 and 10 years old and of the children with profound deafness half were found to be totally illiterate. Only 18 of the 468 children tested (3.7%) had reading ages comparable to their hearing contemporaries. 13 of these children were described as having severe hearing loss (less than 86dB) which meant that only 1% of children from the total sample with profound hearing loss had age-appropriate reading skills. These poor results led Conrad to speculate on the general education approach under the oral-aural philosophy in failing to enable children to develop linguistic competence in any language.

In addition to these findings concerning reading ability of the deaf school-leavers, Conrad also considered their lip reading skills and speech intelligibility. He found that despite 10 years of training and practice at lip reading only 16% of the profoundly deaf children (n = 208) could derive information through speech alone using their lip reading skills. Using a control group of hearing children he found that the deaf cohort could not lip read any more successfully than untrained and inexperienced hearing children. In terms of speech intelligibility he asked a panel of inexperienced assessors to judge the tape-recorded speech of each child and found that only 26.5% of the children with hearing losses of over 90dB

had barely intelligible speech. This led him to question the effectiveness of speech training procedures and the value of conscious and controlled practice of speech production skills.

Research that points to the overall positive effects of oral programmes tends to draw on highly selected examples of students from model oral programmes (Geers and Moog, 1989; Harrison, Simpson and Stuart, 1991,1992; Lewis, 1996). The selection bias evident in these often quoted reports make it impossible to fairly measure the success of different types of educational approaches as no systematic links can be identified between the teaching methods and outcomes described.

#### **2.4.4 The problems with Total Communication approaches**

In response to the concerns about oral approaches to the education of deaf children many deaf education programmes in the 1970s began using manually coded sign systems.

Problems which became apparent were that the use of this bimodal approach was not leading to improvements in the pupils' language and literacy skills in English (Marmor and Petitto, 1979; Schlesinger, 1986; Lynas, 1994). Early research into sign language also led to a closer scrutiny of manually coded sign systems such as Signed Swedish or Signed English. Research into the features of manually coded signed systems of America and Europe found that they did not provide an adequate model for majority language learning (Bergman 1978; Charrow 1975a; Marmor and Petitto 1979; Svartholm 1993; Hansen 1980; Hoffmeister 1992; Johnson, Liddell and Erting, 1989). These artificial signed systems were found to be of limited value because of the observed frequency of errors in production, the difficulty of the level of English match and the reliance on a prior knowledge of the grammar of the language being spoken.



Erting (1992) argues that most classrooms where Total Communication (i.e. the use of a signed support system) is in use remain English dominated (oral and auditory) classrooms. She stresses that Manually Coded English can be used to communicate with deaf children for certain purposes in certain contexts but that they do not contribute to the development of deaf children's cognitive and symbolic tools needed to develop the second language of English. This body of research points to the importance of making a clear separation between the two languages of sign language and English and the potential benefits for deaf children's bilingual language development.

Research carried out at Gallaudet University (reported in Mahshie 1995) supports this argument as it was demonstrated that when speech and sign language were kept separate, it became apparent that the pupils had a natural interest and predisposition towards using speech, in that they enjoyed meaningful listening and speaking activities. Without the use of sim-com the pupils were more attentive to sound and spoken language and made better use of their hearing aids

Evidence that children exposed to Manually Coded English spontaneously acquire grammatical features of natural sign languages also raises questions about the value of Manually Coded English systems. A study by Livingston (1983) looked at the spontaneous sign language of 6 profoundly deaf children of hearing parents who knew no sign language and who were exposed to Signed English at school. The contrast between the development of the children's ASL and Signed English structures revealed that the children were actually more linguistically competent in ASL even though they had no adult model for this language. The children demonstrated systematic strategies to convey their intentions which involved a creative use of language independent of the model they had been continually exposed to. She concludes that this research adds weight to the theory that language

learning is a creative within-child process. This growing dissatisfaction with the combined use of sign language and spoken language at a time when sign language was becoming accepted as a language in its own right, encouraged educators to redefine and clarify the role of sign language in the education of deaf children. The needs became apparent for the more distinct use of sign language and English in the educational context and for deaf children's competence in sign language *per se* to be identified as an educational goal.

#### **2.4.5 The importance of identity and self esteem**

Within the context of this newly developing educational ideology which recognised the role of sign language in deaf children's development, the importance of a positive self-identity and a high regard for one's own language also became an educational goal. (Finn 1995; Anderson 1986; Brennan and Brien 1995; Gregory, Smith and Wells, 1997; Kannapell 1993; Erting 1988). The changing status of sign language in deaf children's education brought to the foreground the notion of a deaf identity and of the importance of a sense of pride in being deaf (Lucas, 1989; Sacks, 1989; Padden and Humphries, 1988). Learning a language is seen to be at the root of the development of a self-concept as it is through language that one engages in experiences with others and receives feedback regarding others' views and expectations of the self (Garrison and Tesch, 1978). Language therefore serves to facilitate the process of interaction and to organise those experiences. A positive self-concept is activated through knowing a language and being able to communicate freely with others, Finn (1995), and it is expected that this greater degree of confidence will have a positive effect on the development of pupils' English language abilities (Anderson, 1986).

#### **2.5 The theoretical rationale for sign bilingual education**

Sign bilingual education for deaf children has been established in parts of the UK only since the late 1980s and in practical terms it is continuing to be reappraised, improved and more

clearly defined (Pickersgill and Gregory, 1998). It is recognised that we still only have a very limited understanding of the nature of sign bilingualism based on our knowledge and understanding of the bilingual language development of hearing children learning two spoken languages. This is itself problematic as many differences exist between the two groups and their language learning situations.

### **2.5.1 Research into spoken bilingualism**

The theoretical rationale for sign bilingual education is based on findings from research with hearing bilingual children and theories around the most appropriate educational support needed for bilingual children. Parallels are drawn between deaf and hearing bilingual children and their educational needs and theoretical arguments put forward regarding the most facilitative educational environment (Luetke-Stahlman 1983; Strong 1988; Kyle, 1994; Baker 1997). Research into the language development of minority language students is used as a premise for proposals about how to educate deaf children. The focus of this is the argument that for minority language children a strong first language provides a basis for the development of the necessary cognitive skills to facilitate school curriculum and second language learning (Cummins 1979, 1980; Krashen, 1982).

Two fundamental developments in bilingual and deaf education provided the impetus for the establishment of sign bilingual education for deaf children. These are the evidence of the positive aspects of bilingualism which began to emerge in the early 1970s (Lambert and Tucker, 1972) and the recognition of BSL as a naturally evolved and fully fledged language (Brennan, 1976). Despite the increasing amount of research into both of these two distinct areas we still lack research which brings bilingualism and sign language together as a unique phenomenon. At an international level, Scandinavia and North America are making

significant contributions to this developing area in the domains of both practice and research although very little data on educational outcomes is available.

### **2.5.2 The theory of linguistic interdependence**

The theory of language interdependence (Cummins, 1989, 1991), which holds that skills acquired in a first language can be transferred to the learning of the second language, is also applied to deaf children. It is argued that if deaf children are enabled to develop sign language as a preferred language which they can readily understand, use freely and learn through, they will have a language through which they can learn the spoken or written form of the majority language. This argument is based on the premise that proficiency in the first or preferred language is a reliable predictor of second language development (Cummins and Swain, 1986; Hakuta, 1990).

Application of this theory to the education of sign bilingual deaf children implies that the development of communicative competence in sign language should precede the development of second language literacy skills. Sign language is seen to be the route to developing the 'meaning-making and meaning-sharing' capacities of deaf children (Livingston 1986, p.229) and as the reference point for explaining and comparing how meanings are expressed in written language.

This approach relies on the children having a sufficiently well developed preferred language (sign language) before they enter school. The emphasis of preschool education therefore becomes the acquisition of age-appropriate language skills in sign language. Maxwell (1984) argues that deaf children will develop the interest, confidence and motivation needed to tackle the written form of the majority language if their self-concept and regard for their own language is secure. The two languages of sign language and English are expected to

continue to develop simultaneously as long as the 'basics' in the preferred language are fully established. For deaf children of hearing parents sign language development may be in advance of spoken language although there is likely to be some overlap. An early emphasis on the development of the majority language without this grounding in a first language is seen as a retrogressive and not a positive step. It is also stressed that an over-emphasis on the majority language skills should not be prioritised to the extent that other as social, cognitive and cultural areas of development are neglected (Mahshie, 1995).

### **2.5.3 Sign language development**

Within this model of sign bilingual education, it is not assumed that deaf children will simply catch sign language skills and develop them to an age-appropriate level by working with deaf adults from preschool upwards. The research by Gregory, Smith and Wells (1994), identified that deaf children need exposure to the adult form of sign language being used in natural communicative situations. It has therefore become increasingly standard to have sign language and deaf studies teaching on the timetable within a sign bilingual approach and to ensure that deaf children have exposure to fluent sign language being used between adults on a daily basis (Pickersgill and Gregory, 1998; Mahshie, 1995; Strong, 1988). Up until now there has been no mechanism for measuring the development of children's sign language skills, that is no established curriculum, no assessment tools and insufficient data available regarding what skills might be expected at different stages of language development. Very limited evidence is therefore available which can provide norms for sign language development as most deaf children do not develop sign language as a first language in the way that other children develop spoken languages. An assessment is currently being developed which will indicate norms for receptive and productive BSL grammar for children aged between 3 - 11 years (Herman, 1999). Although this will provide limited information compared with the plethora of English language assessments available, it

will enable some baseline measures to be taken and for progress in BSL development to be monitored.

#### **2.5.4 Spoken language development**

Proponents of the bilingual approach argue that literacy should be considered the preferred means of access to the second language and skills in literacy skills should support the development of spoken language skills (Johnson, Liddell and Erting, 1989; Mahshie, 1995). The success or failure of an individual's education is not seen in terms of their development of spoken language and in some instances speech is seen only as a possible addition to the deaf child's normal development of language (Hansen, 1990). This philosophy differs from that of an oral-aural framework where the development of spoken language skills is considered to be of primary importance and a pre-requisite for the development of literacy skills. (Lewis, 1998; Lynas, 1994; Watson, 1998). Within a bilingual approach it is appreciated that the majority of speech sounds are not perceptible through lip reading and that literacy skills provide pupils with the phonological, lexical and syntactical skills necessary to disambiguate speech reading to some degree. Various strategies are explored within the sign bilingual approach to disambiguate the spoken form in order to give pupils fuller access to natural spoken language.

Mahshie (1995) reports that in Sweden and Denmark sign language is available where there are concerns about normal language development or where speech is not developing on schedule for all children whatever their level of hearing or aptitude for speech. This approach is based on the firm conviction that sign language development does not compromise the development of a spoken language (Israelite, Ewoldt and Hoffmeister 1992) and that the critical period of language learning does not apply to spoken language for deaf children because speech is, in these cases, being learned as a second language.

This viewpoint can be criticised because of the evidence that there is a critical period during childhood for successful language acquisition (Pinker, 1994). It is likely that one of the key areas for development during the critical period is phonological awareness i.e a sensitivity to the sounds of the language. This theory is supported by findings that adults learning a second language later in life may master the grammatical structure of the language but never fully acquire the appropriate pronunciation.

It has been found that young deaf children can achieve high levels of phonological awareness when they are taught Cued Speech from infancy (Alegria, Leybaert, Charlier and Hage, 1992). It is argued that because Cued Speech disambiguates lip-shapes, young deaf children are able at this early age to develop the basic structures of a phonological code. Unfortunately, no further research into deaf children's phonological skills below the age of 7 years has taken place to contribute to this critical period debate (Sterne, 1996).

### **2.5.5 Literacy development**

It is argued that the deaf pupils' developing sign language skills should be recognised as an area of strength with regard to second language literacy learning and that these skills provide the main route into literacy development without emphasis on speech or English-based sign (Johnson *et. al.*, 1989; Mahshie, 1995; Hansen, 1990). This rationale embodies a structured approach to second language literacy learning (Krashen, 1982). Deaf children are not likely to be able to fully experience enough comprehensible input to be able to develop an internal representation of how that language works and so some transparent teaching and learning of the structure of that language must take place.

Within this approach, it is recognised that the development of reading and writing skills is a more cognitively demanding task than the development of spoken language skills and that a

greater degree of metalinguistic ability is required which may only develop with maturity (Bialystok, 1993). Deaf children are learning written language, in some cases, without a strong command of the spoken form of that language. Because of this, it is argued that early exposure to text should, as far as possible, reflect the circumstances of spoken language exposure i.e. the text should provide context rich, meaningful language which the students are motivated to comprehend. (Svartholm, 1993; Ahlgren, 1992).

#### **2.5.6 Problems with the theoretical rationale**

Mayer and Wells (1996, 1997) explore the short comings the application of the theory of linguistic interdependence to deaf bilingual students with regard to the development of literacy skills. They suggest that the argument that sign language skills can be transferred to the learning of literacy is based on an a false analogy with the linguistic interdependence model (Cummins, 1989, 1991) which proposes that aspects of literate proficiency will be transferred from the first language to the second language. They argue that sign language cannot provide an adequate base for the initial mastery of English in the way that spoken language skills provide the essential bridge into text.

In their critique of this theory, Mayer and Wells point out that bilingual deaf children have not had the opportunity to acquire literacy skills in their preferred language because sign language has no orthography. There are some parallels with other learners whose first language (L1) does not have a written form but these learners are still able to benefit from the support of the spoken form of the second language (L2) when learning to use the written form of the L2.

Mayer and Wells examine this problem of applying the theory of transfer between L1 and L2 in some depth by exploring the role of inner speech in the writing process and how this



relates to deaf children. They suggest that even for children who have successfully acquired sign language as a preferred language, the transfer of skills from one language to another is still problematic. For these children there is evidence to suggest that their inner speech might be a visual-gestural code (Klima and Bellugi, 1979) but we cannot assume that meaning which has been constructed in an internal visual-gestural code can be transferred to linear written language.

They accept that signing about text is supportive for literacy learning but not enough to enable deaf readers to decode unfamiliar text and make the grammatical or vocabulary choices necessary for successful English writing (Olson, 1996). This argument is consonant with the suggestion of developing a writing system for sign languages. Mayer and Wells conclude that if the Cummins (1989) theory of linguistic interdependence is to be applied to sign bilingual deaf children, the nature of that interdependence needs to be more carefully defined,

This critique by Mayer and Wells further demonstrates the problems of attempting to apply principles from second language learning models within the field of hearing bilingualism to sign bilingualism. For the linguistic interdependence theory to be applicable it requires that all the appropriate conditions for the successful learning of a second language are present such as accessible exposure to the second language, opportunities to use the second language for real purposes in communicative contexts and clear separation of the two languages. Although these conditions can be difficult to achieve in a sign bilingual classroom there are other ways of developing literacy skills within a sign bilingual approach which take account of deaf children's strengths as bilingual learners and capitalise on the role of sign language in the teaching and learning process which will be discussed in Chapter 3.

## **2.6 Outcomes of sign bilingual education**

Much of the literature which addresses sign bilingual education for deaf children is either a largely theoretical rationale for this approach or anecdotal descriptions of current practice. Little systematic research has so far been conducted in sign bilingual educational settings. There are only a few research projects to be found which lead to concrete findings about achievements or learning styles of sign bilingual deaf children. This section will briefly review some current educational programmes and deaf children's attainments. Actual teaching approaches will be discussed in more detail within the context of sign bilingualism and literacy in Chapter 3.

### **2.6.1 The goals of sign bilingual education**

The outcomes of sign bilingual education need to be considered alongside the educational goals of this approach. These goals pertain specifically to this philosophical standpoint and so differ significantly from those of the oral-aural approach. The goals of sign bilingual education for deaf children can be discussed in global (pertaining to society) and specific or individual terms. At an individual level the central tenet is that of equality of opportunity for deaf children in the following areas:

- the development of linguistic competence in sign language and/or English as appropriate
- access to a broad and balanced curriculum through a preferred language
- the development of literacy skills to an age-appropriate level
- the development of a secure self-identity in terms of confidence and pride in one's own language and culture

(Gregory, Smith and Wells, 1994)

At a more global level the goals are defined as follows:

- the recognition of the language and culture of deaf people
- the recognition of the value of linguistic and cultural pluralism in society
- the removal of oppression and the empowerment of deaf people

(Pickersgill and Gregory, 1998)

### **2.6.2 Reports from Scandinavia**

One of the most comprehensive discussions of current sign bilingual education can be found in Mahshie (1995), where the focus is on practice in Sweden and Denmark. Mahshie's intention is that this research is descriptive and not evaluative. Although this research is largely descriptive it is reported from the perspective of an outsider. Mahshie describes her approach as investigative reporting and makes clear her intention not to establish attainment statistics for comparison but rather to 'gain first hand information about bilingual education in both countries based on interviews, observations and available publications' (Mahshie, 1995, p. xxiii). The generalisability and validity of her descriptions relies on the richness and amount of data to enable consensus and differences to be analysed and confirmed through observation.

Mahshie reports that the Swedish children in the first bilingual class (starting in 1982) when given a reading test demonstrated threshold reading levels by the fourth grade, (i.e. the ability to read for understanding and make inferences about unfamiliar content). These attainments were superior to those of their deaf peers in other normal classes. Mahshie reports that the first deaf children in the bilingual programmes in Denmark and Sweden left school with reading and maths attainment levels commensurate with their hearing peers. These results are explained by the children's early use of sign language with their parents. These students also attained higher results than their deaf contemporaries. Mahshie also

reports on the results of standardised reading test administered to nine deaf children who been exposed to sign language during pre-school years and taught Swedish as a second language. In a test of reading eight of the nine students were average or above. In the writing test four of the nine students were average or above. Thus data on attainment is reported anecdotally throughout the wide ranging review and it is not clear if any of it is statistically significant. Certainly, much of it is retrospective and lacks sufficient rigour needed to be considered as reliable evidence of the effects of any particular educational approach.

Other significant findings from Scandinavia are reported by Svartholm 1994; Hansen 1990; and Heiling, 1995. Svartholm (1994) tested the reading comprehension levels of 23 school leavers from Manilla school for the deaf in Stockholm. The students were given a written Swedish text and ask to summarise it in sign language. The reading test was one used normally with hearing pupils learning Swedish as a second language which demands a level of comprehension equivalent to native proficiency. When the test was given to 57 deaf adults only 2 of them could give acceptable answers to all the five questions. When the test was given to the school leavers the group from the bilingual programme showed an advanced level of knowledge and understanding of written language along with a more developed ability to tackle new and difficult material in written Swedish. They were able to make informed and semantically appropriate guesses and offer spontaneous comments and reactions to the text. Svartholm remarks that confidence in sign language as well as in the written language was a distinguishing feature of these children. This research must however be considered in the context of the very different educational experiences the adults and children involved would have been exposed to. It is likely that the adults would be unfamiliar with such an activity given their more formal experience of literacy instruction then the children tested.

Hansen (1990) reports the test results of a group of nine 12 year old children being educated bilingually in Denmark. The children began the bilingual programme at 6 years of age and at the age of 7 years their sign language skills were analysed. At this stage only two of the nine children were found to have age-appropriate sign language skills. By the age of 9, when the analysis was repeated, seven of the children were reported to be using DSL fluently in that they could retell stories without searching for signs and incorporate appropriate grammatical features of DSL. Instruction in Danish was not introduced until the second year of the programme. Sign language was used as the language of instruction and the teaching focused on spoken and written language with the use of Danish cued speech and the use of translation from written Danish to DSL. At the age of 12 years five of the nine children demonstrated age appropriate reading levels and at the age of 14 years seven of them were fluent readers. Other outcomes that she reports include the improvement of their lip reading skills, and general cognitive abilities. She remarks particularly on the children's ability to use DSL at a sophisticated level, such as to argue and debate abstract issues, as well as to be able to identify language variations between DSL and Danish.

They know about some of the differences between spoken Danish and written Danish, and they accept their situation as deaf in a hearing society. They are the first group of deaf children to actually question the way they are approached by hearing people, at the same time as they accept that they are different  
(Hansen, 1990, p.60).

These benefits are not systematically researched but incidentally reported and yet hugely important for the child's continuing linguistic, cognitive and social development. Perhaps a more tangible indicator of the success of this approach is the choices that hearing parents

are making to send their hard of hearing children to the schools for the deaf in order that they benefit from the DSL environment and from the opportunities to mix with larger groups of deaf children. These children continue to develop Danish as a preferred language but learn DSL as a second language. Sign bilingual education is firmly established in Denmark in all of the schools for the deaf and Hansen reports that most deaf children are entering school with age-appropriate DSL skills (skills at a higher level than the first experimental group). She acknowledges that this can be explained in part by the changing attitudes of the parents and their increasing acceptance of DSL and the establishment of early intervention programmes.

Heiling's (1995) study is one of the few which discusses the achievements of deaf children within bilingual settings in terms of test results. This study takes place within the context of changes to the educational system for deaf children in Sweden in the early 1980s when the 1983 National Curriculum stated that Swedish Sign Language and Swedish should be the languages of instruction in schools for the deaf (with an emphasis on written Swedish). Prior to this, the use of sign language had been introduced into certain preschools for deaf children since 1973.

This study is based on the thesis that easily accessible communication is crucial for social and intellectual development in deaf children. The areas of social and intellectual development are explored through separate strands of the study. One strand focuses on the social development of 20 prelingually deaf pre-school children (aged between 3 and 7 years). The second strand examines the attainments of this original group of 20 children and their class mates (40 altogether) when they reached grade 8 (aged 15 years). Achievements in Swedish and maths and certain other test of cognitive ability such as problem solving and spatial tests are explored. The goal of this aspect of the research is to explore how the

introduction of sign language into the educational system has affected students' levels of proficiency in Swedish and maths. In order to ascertain this the results of the test of this group of children were compared with the results of the corresponding tests which were administered in the 1960s within an oral-aural educational approach. This research strategy raises several methodological issues which will be explored following a discussion of the results. The main findings from the test battery were that levels of achievement in maths and Swedish had risen but that spatial and perceptual ability had remained the same. The main conclusion drawn from this study is that the deaf children in the 1980s group, who had exposure to sign language from a preschool level, were achieving more highly than children in the corresponding 1960s group who were being educated within a strong oral tradition.

Heiling stresses in this conclusion that this is despite the fact that the sign language accessible to the children was rarely that of a native sign language user but more likely to be incomplete Swedish sign language used by both parents and teachers. It is speculated nevertheless that the level of communication in the home and school setting would have been much improved for the 1980s group. Developments in educational practice and greater insight into deafness and its implications are likely to be as responsible for the shift in attainments regardless of the educational method under scrutiny.

The difficulty with these findings is that they do not show to what extent the introduction of sign language supports the children's progress in each of these areas. Instead it is a comparison of results from two very different educational and sociological eras. This calls into question the number of other factors which might have influenced the difference in results such as improved parental education, the introduction of preschool support systems, increased involvement of parents in the education of their children, improved access to information television test conditions, the children's perceptions of the tests and relationship

with test administrator. It could also be argued that most children will make general progress over time. Heiling argues that these factors should be seen alongside the introduction of sign language and not as alternatives and it can be argued that they are all factors which are related to an increased understanding and awareness of the educational implications of deafness and the communicative needs of deaf children. These improvements can perhaps then be attributed to the changing climate within deaf education which includes the introduction of Swedish sign language. Progress that the pupils make within this climate would provide a better picture of the 'value added' benefits that sign language brings to these pupils' achievement.

### **2.6.3 Reports from the USA**

Strong (1988) describes an experimental bilingual curriculum for young deaf children in which ASL is used as the preferred language. The goals below of the programme were two-fold, focusing on the development of bilingual language ability and metalinguistic skills:

- i) To develop and expand pupils' ASL skills and then to use that language as a medium for teaching English
  - ii) To develop pupils' awareness of ASL and English as equal and separate languages together with an ability to recognise some of the differences between the two languages
- (Strong 1988, p.121)

The programme involved the teaching of a special syllabus to 8 profoundly deaf children by a deaf sign bilingual teacher. The syllabus consisted of a series of culturally appropriate stories which were initially delivered in ASL and then followed up by activities which focused on certain functional or grammatical features of ASL (such as the use of pronouns; asking questions; the use of classifiers). The second part of the syllabus entailed stories told



in ASL and then in Manually Coded English. The children were encouraged to look for differences between the two versions and activities were designed which introduced elementary English constructions and demonstrated how the same function was performed differently in ASL and English. All of the sessions were conducted in ASL. This programme is particularly interesting as it considers language awareness as central to the children's development as well as the separates abilities in the two different languages. This programme was evaluated by testing the children's vocabulary, structural awareness and metalinguistic awareness but the final results and conclusions are unfortunately not reported.

#### **2.6.4 Reports from France**

Bouvet (1990) conducted a study of 6 deaf children within a bilingual nursery class with one deaf and one hearing teacher. The children were between 4.5 and 6 years old and all came to the nursery with impoverished communication, attention and interaction skills. One of the main components of the programme was bilingual story telling where the deaf adult used French Sign Language (LSF) and the hearing adult used spoken English. Stories were told repeatedly in both languages (sign language first) and as the children progressed, sentences from the stories were written on a board for discussion and translation. The results of this programme are described quite generally without specific details but nevertheless there are some interesting insights into the development of the children's bilingual and metalinguistic skills. Bouvet reports that during the story telling phase the children would often imitate the adults' signed and spoken utterances even though they were not able to fully access and represent the spoken message. The children's would also translate the spoken language versions of the stories into sign language. Discussion between the group and the deaf adult took place showing how different signs corresponded to the written form and the hearing teachers would read the sentences aloud to show how the lip patterns corresponded to the

written words. A signed system similar to Cued Speech was used to show the articulatory and written characteristics of each phoneme to help the children's phonological and visual memory development for each word.

Bouvet argues that through playing with the two languages in this way the children developed a metalinguistic awareness that is an understanding that 'language was in itself an object of knowledge' (p. 165). Another outcome that she describes was the children's increased attention to the sign language production of adults and peers and their ability to ask questions and make analytical comments about the formation of particular signs or to offer synonymous signs. She also reports increased confidence in the children with the production of speech or lip patterns, and an awareness of their own and others' mistakes with spoken language. Bouvet describes the children's general language development giving examples of certain milestones passed by each individual, such as the ability to make short statements in LSF or to tell a personal story in LSF. She documents examples which demonstrate that the children were fully aware of the difference between a signed and a spoken language even though at times they simultaneously signed and vocalised. A final mark of success reported in terms of general communicative ability was when the children were integrated with interpreting support into the mainstream setting.

Bouvet concludes that the access the children had to the 3 different worlds of language enabled them to quickly learn to move between the two languages of written/spoken French and LSF and to develop metalinguistic skills based on their natural curiosity and interest in language and their developing confidence in themselves as social and literate beings. This project provides one of the few detailed descriptions of the ways in which sign language, spoken language and written language can be used alongside each other effectively in the

teaching context. It is very difficult to measure the exact benefits of the intervention described as the reports of the children's language development are not systematic.

### **2.6.5 Reports from the UK**

The research carried out by Gregory, Smith and Wells (1994) is the only large-scale project into sign bilingual education which has so far been completed in Great Britain. This project focused on a school for the deaf which has a sign bilingual philosophy and 4 mainstream schools which constitute the primary provision within a different LEA's integrated sign bilingual programme. Twenty five children between 6 and 10 years were drawn from the two educational settings and video data collected of 20 different school scenarios for each child including natural and experimental situations. In addition to this, interviews were carried out with all of the pupils and with the deaf and hearing professionals involved in their education, at both classroom and management level.

The central goal of the research was to consider the attainments and general educational experience of the sample group with reference to the identified goals of sign bilingual education. Findings were reported in the areas of deaf children's BSL development, their reading, writing and maths attainments and self identity.

#### *BSL development*

Data was collected from news session and re-telling of cartoon story and the children were grouped according to their level of proficiency in sign language each year. It is interesting to note that although some improvement is evident the majority of children clustered around the two lowest groups in both analysis. Evidence was reported that all the children were developing as competent BSL users although better progress was observed in those with other deaf family members

## *Reading*

Data was collected on the children's reading abilities through the use of an open task, directed by the individual teachers and a formal assessment task from the English National Curriculum Assessments. The standardised assessment task involved the children in reading a part of a text to themselves and then re-telling what happened in BSL. A set of questions was then asked to assess the children's understanding of the actual text without the support of the pictures. Wells (1994) emphasises the importance of a deaf person being the audience for the re-telling so that the children did not have to cope with the demands of adapting their BSL re-telling for a hearing person. The data was analysed for evidence of attainment over the two year period, the general reading strategies adopted when meeting an unfamiliar word and approaches to the task of reading silently.

In terms of attainment, progress was found to be slow but still discernible over a 12 month period. This split focus on attainment on use of one standardised test and individual strategies does not provide in depth findings in either domain although reveals interesting preliminary findings about deaf children's reading strategies.

## *Writing*

This is one of the few studies which considers deaf children's writing strategies and achievements from a second language perspective. In the report of these findings BSL is recognised as the preferred language and it is acknowledged that written English is likely to be the main means source of access to English (Gregory 1997). This aspect of the research considered the strategies the children used for writing and the extent to which their knowledge of BSL influenced their writing, in both positive (facilitative) and negative (interference) terms. The data used was the children's writing of their weekly news, having previously presented it in BSL and their writing of a story initially viewed in cartoon form.

These scenarios provide contrasting information as in the 'news' situation the children had already prepared and discussed their ideas in BSL, they were therefore being put in a translation situation in that they had to transfer those thoughts, ideas and expressions into written English. The cartoon however provided a neutral source in that no language was used as the preliminary model. Common errors that the children made in their writing were analysed in order to reveal the strategies and processes that the children used to construct their written English. Errors which appeared in the writing of 24% of the children or more were reported as:

- the use of the topic first in a phrase, rather than the subject, followed by a comment which reflects the structure of BSL,
- the omission of the introduction of the second character or use of speech marks to indicate interaction between two people which is indicated in BSL only through the use of body movement or facial expression,
- the introduction of characters followed immediately by what the character says without the English conventions of speech marks and the use of a word such as 'said' or 'answered'. This reflects the ways in which the story teller can become one of the characters in BSL and sign what s/he did without having to give further explanations.

Gregory (1997) concludes from this analysis that these errors suggest that deaf children use their knowledge of BSL in their English writing. Gregory argues that this should be considered as a positive transitional stage which could open up the possibilities of the use of BSL for the discussion of English and how it expresses grammatical information in comparison to sign language.

### *General attainments*

Standardised National Curriculum assessments were used to assess attainments in maths and English although acknowledgement was given to the difficulties of using this type of formal assessment task. The main reservations expressed were that these tests are developed for hearing children for whom English is a preferred language. These tests are also limited in their scope as they do not give any information about how deaf children learn and carry out particular tasks but just compare their performance to their hearing peers. The children were assessed on two types of maths tasks (conceptual ability and formal maths) reading comprehension, creative writing, and spelling.

The best scores were in maths and spelling. In spelling only 5 out of the 25 showed no improvement. The majority of the children showed good or some improvement in both maths tasks. The poorest scores were for reading and writing. In reading only 3 out of the 25 showed no improvement although only 3 showed good improvement. In writing 9 showed no improvement. The older children showed greater improvement than the younger ones which was interpreted as showing that the children in the bilingual programmes longer were achieving higher levels. The children with the best BSL skills at the start of the project demonstrated the greatest improvement, highlighting the benefits of secure foundation in sign language as a first language.

### *Self identity*

Another area considered was the children's emerging sense of self and language awareness (Gregory, Smith and Wells, 1997). The children were interviewed by the deaf researcher in the areas of attitudes towards school, home and deaf issues. When the children were asked about their concept of 'deaf' and 'hearing' only a minority of children talked about deafness in terms of a negative situation or deficit. Many children emphasised the use of sign

language or gave examples of not being able to hear or related the term just to themselves. In terms of their concept of hearing most children either talked about what being able to hear meant giving practical examples or referred to the use of speech or people significant to them who were hearing.

Gregory *et al.* conclude from these and other responses to questions about the differences between deaf and hearing people that these deaf children recognise the effects of deafness on their everyday lives but are able to think and talk positively about deafness. Questions were also asked of the children about their concept of sign language and English. The children demonstrated complex knowledge about sign language and an ability to make judgements about people's varying abilities. The majority of answers to questions about English focused on the link between writing and English whereas speaking was only mentioned by 3 out of the 18 children asked. The children were also asked how they saw themselves as adults and while many of them talked in terms of their parents occupations, 9 out of the 18 saw themselves working with deaf children or other deaf adults.

Gregory *et al.* conclude that the sign bilingual children in this study demonstrate a basic understanding of the concepts of deafness, deaf culture and deaf identity and are secure in their understanding of their own deafness and their vision of the future as deaf adults. The children's knowledge of sign language is recognised as an essential foundation to their developing identity and language awareness. Most children were able to recognise and express the importance of both sign language and English in their school and future lives.

This study opens up several important areas for future research in terms of the sign language and English development of sign bilingual deaf children. The research into the BSL aspect provides useful pointers for teaching programmes and for the organisation of staffing within sign bilingual settings although a more systematic profile of age-appropriate

individual skills was not achieved. It is difficult to know from the results what the individual children's individual bilingual profiles were, in terms of where their dominances lay and how this affected their performance in the various tasks. This would have been illuminating information. The research provides more of an overview of what children are doing in sign bilingual programmes rather than detailed information of either their learning strategies or their attainments. This might be explained by the dual focus of the research and the absence of an established research forum in this area on which to base research questions or the methodology.

## **2.7 Conclusion**

The rationale for a sign bilingual approach relies on the somewhat superficial interpretation of aspects of research into bilingualism in two spoken languages. Because of this, many of the assumptions upon which a sign bilingual model rests need re-examining such as linguistic interdependence and language transfer. The more unique aspects of sign bilingualism also need to be properly explored, such as the modalities issue and sign bilingual cognition, in order that a fuller understanding of sign bilingual language development is reached. Questions raised by other reviews of sign bilingualism consistently query the rationale on the issues of linguistic interdependence; routes to literacy; the role of natural and contrived sign systems and effective models of teaching and learning for English (Paul, 1998; Mayer and Akamatsu, 1999; Schirmer, 1994; Stewart, 1993).

It is only through research into sign bilingual language development that these issues can be properly tackled. Currently, research into sign bilingual language development and sign bilingual education is both scarce and problematic. It is scarce because sign bilingual educational programmes are few in number and only relatively recent. Because of this there are no appropriate measures of success or assessment procedures which provide data



related to significant success criteria such as sign language and written English development. It is problematic because most of the research is usually descriptive and the small number of more systematic projects neglect consideration of the language acquisition process.

Where attainments are reported their credibility is compromised by the lack of reasonably sized and controlled cohorts and the need for some established research methodology. In addition to this, the research credibility suffers from an inconsistent use of (language) terminology and the lack of specific research questions in this field. In conclusion, sign bilingual education has been fuelled by a commitment to basic linguistic human rights and relies more on a corporate act of faith rather than research outcomes for its endorsement.

Effective sign bilingual education requires an understanding of sign bilingual language development. As yet, we have little information upon which to base educational practice. Of particular significance are issues related to moving between two languages and two different modalities. We need to know more about ways in which deaf children construct this experience. A related question concerns ways in which the acquisition of sign language impacts upon on the learning of spoken and written English and the extent to which the learning of sign language can support the development of English literacy skills. How can one language support the learning of another? This interrelationship has so far been explored in the context of literacy development where the most significant learning benefits are described as metalinguistic skills and awareness. Within most programmes reported there tends to be a perceived need to focus on pupil's metalinguistic abilities as a route to literacy and although some positive results are reported the definition of metalinguistic ability remains unclear. The following chapter will address this aspect of language development with a view to clarifying the notion of metalinguistic ability within the sign

bilingual context and reviewing its reported benefits for the development of bilingual linguistic competence.

## **CHAPTER 3. SIGN BILINGUALISM AND LITERACY**

### **3.1 Introduction**

Consideration of deaf children as sign bilingual enables us to view the development of their English literacy skills within a different paradigm. A paradigm is defined as the framework of beliefs and attitudes about a certain phenomenon that drives the research questions and the interpretation of the research data (Grushkin, 1998). Most of the research into the development of deaf children's English language skills is based on comparisons with hearing children with the emphasis on within-child deficit and difference. Where deaf children are recognised as potentially bilingual, they can be considered as second language English (E2L) learners. Within this paradigm deaf children are considered as individuals with the potential to develop sign language as a preferred language and English as a second language. This model requires that the analysis of deaf children's literacy development is considered within a second language learning framework where the influences of sign language on the children's developing skills is considered. However, there is very little empirical research reported on sign bilingualism and literacy and much of the literature presents only descriptions of programmes or theoretical argument. The literature that is available points to practical and theoretical problems which need to be further explored.

One of the central tenets of sign bilingual education is that early experience with sign language is facilitative in the learning of English literacy skills (Lane, Hoffmeister and Bahan, 1996; Luetke-Stahlman and Luckner, 1991; Johnson, Liddell and Erting, 1989; Paul, 1998). As discussed in the previous chapter, this position has been criticised for being too reliant on the conditions normal for bilinguals of two spoken languages and for the lack of clarity regarding the nature of support that sign language provides. The role of sign

language in this process needs therefore more careful examination. This chapter will outline areas of similarity between deaf and hearing children as second language literacy learners and discuss the different characteristics of deaf children's second language literacy development. Interpretations of the sign bilingualism literacy theory regarding the role of sign will be discussed. The theoretical and practical questions which arise from this review lead to the main research questions and the development of the methodology for this study.

### **3.2 Deaf children learning English as a second language**

It is argued that sign bilingual children share similarities with English as a second language (E2L) learners and demonstrate some similar literate behaviour (Grushkin, 1998; Paul, 1998). Theoretically, several similarities do exist between deaf and hearing children who are learning to read and write in their second language. These provide the basis for consideration of deaf children's literacy development within an E2L context.

#### **3.2.1 Similarities with hearing E2L learners**

The fundamental similarity is that both groups of children are meeting the written form of a language which they are learning in addition to their preferred language. For each individual, the first language will be at different stages of development, depending on the simultaneous or successive nature of the child's bilingualism. It has been argued that sign language should be the first language for most deaf students because it is the language which deaf children can most easily acquire and through which they can progress through the same stages of linguistic development as hearing children learning a spoken language (Petitto and Marentette, 1991; Bellugi, 1991). For many deaf children, their sign language skills will still be developing when they begin to learn to read and write English. This is a

linguistic situation which is experienced by many other bilingual children whose home language is a minority language and not the language of the educational setting.

Deaf and hearing bilingual children approach the task of learning to read and write with a diverse set of experiences which distinguish them from children learning to read and write in their first language. They are likely to be learning to manipulate the written form of the language with an incomplete knowledge of its spoken form. They may have a limited vocabulary and repertoire of sounds of the language; they may also lack knowledge of the morphology and syntax of the language and of its orthographic conventions. Because they do not begin second language reading with the same level of linguistic competence as first language readers they may experience both bottom up and top down difficulties i.e. be over-reliant on top-down cues (guessing, use of context) or have poor sight recognition of individual words and be subsequently unskilled at reading for meaning (McLaughlin, 1987; Paul, 1998).

In addition to this, the individual's cultural expectations and experiences of first language literacy may conflict with their experience of second language literacy development. For those children who do read in their first language, the training that they have received may reflect very different social attitudes to literacy and may represent a contrasting experience of literacy development to that experienced in school. The experience of literacy in the first language may therefore be totally absent or qualitatively different which raises the question of what skills might be transferable to the second language learning context (Grabe, 1988; Gregory, 1996).

### **3.2.2 Differences from hearing E2L learners**

Despite the similarities identified above, grouping sign bilingual children with hearing second language literacy learners is problematic for a number of reasons. The deaf child's preferred language of sign language may not be the language of the home and so their first sustained contact with mature users of sign language may not occur until nursery age. When they begin to learn to read and write in their second language they may not have already acquired age-appropriate sign language skills. Sign bilingual children's linguistic starting point for literacy development is therefore less secure than that of most hearing bilingual children.

For many young deaf children acquisition of the conversational form of English as a precursor to the development of literacy skills, is not a realistic option. Most hearing children are learning to read and write a language that they already know and in which they have gained conversational fluency. Deaf children approach literacy development with a limited framework of the language thus reducing their ability to draw on their phonological and syntactic knowledge to make sense of new text.

Finally, sign bilingualism and literacy involves a third modality which confounds the notion of transfer or application of skills from L1 to L2. It is expected that sign bilingual deaf children will approach the development of literacy skills with some established skills in sign language but how this knowledge of a visual-gestural language might support the development of a written linear language remains unresolved. Many hearing children may be able to draw on their understanding of how their first language works as a system to support their learning of the second language. Deaf children will not be so readily able to

apply that first language knowledge to second language literacy learning because of the different ways in which their two languages are produced and perceived.

Paul (1998) argues that this theoretical mismatch undermines the principles of sign bilingual education. He questions the validity of the teaching approaches promoted which are based on the assumption that deaf students can use their knowledge of sign language (ASL or BSL) to learn about written English without ever manipulating the conversational form of English. He argues that there is little evidence to support this assumption where phonetically based languages are concerned. He states that phonological and morphological knowledge, normally accessed through the conversational form of the language, is essential for achieving literacy proficiency:

Is it possible to bypass phonology and morphology of a phonetic system such as English in order to read and write this language? Even the better ASL readers tend to use a phonological code during reading (Paul, 1998, p. 178).

Although Paul stresses that this aspect of literacy development has been overlooked, he identifies the emphasis on the early acquisition of language (sign language) as the most important goal of sign bilingual approaches. This early acquisition, he argues, is necessary for the subsequent development of literate thought, that is the ability to 'engage in critical and reflective thought' (1998, p.178). Paul argues that the development of this ability is possible without accompanying text-based skills, although this is not a widely accepted view, and that this model of literate thought might be more relevant and a less oppressive educational goal for severely and profoundly deaf students. What is interesting about Paul's argument is the notion that literate thought can be achieved, given the early development of a first language, without a need for the connection to text-based literacy skills. If this is the

case, in the sign bilingual context the development of critical and reflective thought could provide the starting point for the text-based skills which deaf students find so difficult to master. This notion is indeed reflected in the current direction of most research and developmental classroom practice within the domain of sign bilingualism and literacy.

### **3.3 Research into sign bilingualism and literacy development**

The limited research that is reported on sign bilingualism and literacy falls into two main areas. There are some studies which describe sign bilingual children's language and literacy development and a few which describe and attempt to evaluate teaching approaches where sign language is used as the language of instruction. Studies of deaf children's literacy development include research which aims to establish the facilitative nature of sign language for literacy development and that which seeks to compare deaf children with other E2L literacy learners. We will firstly consider the research which explores the effect of early sign language development on the development of second language literacy skills.

#### **3.3.1 Early sign language skills as facilitative for literacy development**

Indirect evidence of the support for literacy development that sign language provides comes from research conducted mostly in the 1960s. These largely retrospective studies compared the attainments of deaf children with deaf parents (DCDP) with deaf children of hearing parents (DCHP) in terms of linguistic and academic success. It was found that DCDP typically outperformed DCHP across all areas of learning (Meadow, 1968; Quigley and Frisna, 1961; Stuckless and Birch, 1966; Brasel and Quigley, 1977).



There are, however, several caveats to these findings which need to be taken into consideration. The first is the proposal that DCDP are likely to be more secure and confident learners because of more relaxed and confident parenting. Secondly, DCHP may experience additional learning difficulties more frequently than DCDP because the causes of deafness are more likely to be linked with medical trauma rather than with hereditary factors. Thirdly, deaf parents may be more attuned to their child's visual orientation and thus be able to offer carefully directed support towards their children's developing literacy skills and to help them connect sign to print (Andrews and Taylor, 1987). Finally, most of these studies were conducted before grammatical descriptions of sign language were available, therefore assertions regarding sign language fluency (of the parents and children) should be questioned (Paul 1998).

Despite these issues, conclusions have been drawn from this body of research that deaf children of deaf parents are more likely to grow up using sign language and that this first language learning has a positive effect on the development of literacy skills (Braden, 1994). However, several researchers argue that this positive relationship is still speculative and more empirical research is needed to substantiate the argument as this group of children's greater success with literacy cannot be explained by the use of sign language alone (Strong and Prinz, 1997; Grushkin, 1998, Paul 1998). Even though such reservations continue to be expressed about the proven positive effects of sign language on literacy development the finding that the acquisition of sign language does not inhibit literacy development remains secure.

Only a very small number of studies have systematically attempted to support the hypothesis that early acquisition of sign language is facilitative for developing literacy skills. Luetke-Stahlman (1988a, 1988b) explores the issue of the different types of communication which

can be described as ‘manual communication’ and their relative effects on literacy development. Luetke-Stahlman differentiates between students who have been exposed to the complete languages of ASL or English, including complete representations of English (Cued Speech, Signed Exact English) and those who have been exposed to incomplete representations of English (Pidgin Signed English, Signed English). This research demonstrated that the students in the ‘complete languages’ group outperformed those in the other group on 6 out of 7 assessment measures. This study points to the need to find out more about the process of second language learning for deaf students both in the classroom and within the individual.

A study by Strong and Prinz, (1997) aims to demonstrate a relationship between ASL competence and English literacy skills among residential school deaf children aged between 8 - 15 years. 160 deaf students were recruited from the same school and controlled for age, IQ, type and degree of hearing loss, and parental hearing status. ASL and English literacy skills were tested (productive and receptive) and the scores were analysed for correlation between ASL and English literacy skills. This study claims to indicate a clear, consistent and statistically significant relationship between ASL skills and English literacy. Across the whole age group investigated, subjects with the more well developed ASL skills performed at a higher level on the English literacy tests. The results to stand up to considerable scrutiny since many of the factors which might normally affect academic achievement were ruled out by the sampling procedure. It is mainly the factor of the quality or intensity of parent-child communication which remains untested which might be associated with the pupils’ performance on the literacy tasks. Their conclusions however, that deaf children’s literacy skills appear to benefit from even moderate fluency in ASL, have important implications for the future direction of literacy instruction in deaf education.

### **3.3.2 Studies of sign bilingual children's literacy development**

A few studies of sign bilingual children's literacy development have focused in more detail on the English aspect in an attempt to identify parallels with bilingual deaf and hearing children's second language development. One early research project which explored this was carried out by Charrow and Fletcher (1974). This study compared the performance of sign language using deaf students on the Test of English as a Foreign Language (TOEFL) with that of ESL students. It was found that the performance of deaf students of deaf parents resembled the performance of foreign language students of English in the tests of English structure and writing ability. They concluded that some aspects of English are learned as a second language by deaf children of deaf parents although on tests of vocabulary and reading DCDP and DCHP were more similar than those of DCDP and ESL students. The superior performances of the deaf students of deaf parents compared to that of the deaf students of hearing parents was interpreted as an indication of the advantages of early competence in sign language. However, because the nature of each subjects' early sign language experience was not specified it was not possible to draw a direct link between early exposure to ASL (as opposed to a manually coded form of English) and improved English skills.

It is interesting to note that in a follow-up study Charrow (1975b) analysed the types of errors that deaf students commonly made and proposed that these might be categorised as 'Deaf English', that is non standard linguistic features which form part of deaf students' language learning process. The common writing errors that were observed included tense and aspect markers, copulas, plural markers, determiners, and prepositions. An experiment was set up to determine whether deaf students found these 'deafisms' easier to recall than hearing students and easier to recall than the standard English sentences. All of the students were asked to write the sentences from memory. It was found that the deaf students

(including those with deaf and hearing parents) remembered more of the 'Deaf English' sentences than did the hearing students. It was also noted that the students did insert a number of standard English syntax structures into parts of the English sentences where they would logically fit but often incorrectly and inconsistently. The conclusion drawn from this was that deaf students do learn standard English rules but do not fully understand or absorb them and so only apply the rules inconsistently, in some cases as an afterthought.

There are problems with both of these studies in that although they describe types of writing behaviour of deaf students they do not provide any direct evidence that deaf children are learning English as a second language, particularly as many of the errors described also exist in oral deaf children's writing (Paul and Quigley, 1994; King and Quigley, 1985; Luetke-Stahlman and Weiner, 1982). Several projects have indicated that similar writing patterns and errors can be found in deaf children's written language regardless of whether or not they have been exposed to sign language (Ivimey and Lachterman, 1980; Langston and Maxwell, 1988). Maxwell (1990) argues that this can be explained by a preference for a visual orientation to the writing process that all deaf children demonstrate whether or not they have access to sign language.

A later study carried out by Langston and Maxwell (1988) showed that texts written by sign language using deaf students could not accurately be distinguished from texts written by ESL learners when given to 30 judges without special training. The inability of the judges to sort the texts suggests that the deaf students and the ESL students wrote texts which were perceived as very similar. The researchers argue that this substantiates their argument that deaf students' writing has similar characteristics to that of ESL students. The impressionistic nature of this research unfortunately undermines the conclusions proposed because no systematic criteria were used in the judgement of the texts in that no

grammatical or structural analysis of the texts took place. In considering the conclusions of this study, Langston and Maxwell highlight the incidental but disturbing fact that the written work of deaf students who have studied and received specialist support with English throughout their school lives appears to be very similar to the writing of foreign college students only just beginning English classes. The poor text construction skills of deaf students reflect their lack of experience of reading and writing sign texts in contrast to the EFL students who are likely to have had some literacy experience in their first language.

Some researchers have looked more specifically for evidence of the influence of BSL on bilingual deaf children's literacy development. An analysis by Jones (1979) of deaf students' texts showed that deaf students were not translating non-manual signs when writing (e.g. use of facial expression, body movement) but tended instead to provide a gloss of the manual signs. Jones suggests that this points to a lack of awareness of the importance of the non-manual signals. Because of this, the original sign language message was not sufficiently conveyed through the students' text to allow it to be comprehensible.

Jones argues that this problem may arise because the students consider that sign language, like English, has one primary channel through which all information is encoded. Jones recommends that one way to tackle this would be to ask the students to consider whether their written English contains the same information as the signed source utterance and he stresses the importance of making clear the distinction between PSE, ASL and written English. These findings focus on what is missed out of the written form but give no information about ways in which deaf children are constructing their model of written English other than to suggest that they attempt to write down a manual gloss of PSE. In contrast to this, more recent research has suggested that deaf children's errors in their writing can in part be explained by the influence of BSL but that this also provides evidence

of their attempts to creatively invent language structures using the blue print of a language that they already know (Gregory, 1997).

### **3.3.3 The role of sign language in the teaching of literacy**

Where sign language is actively used to support the development of literacy skills it is used predominantly as the language of instruction through which explicit reading and writing strategies are taught. Other teaching approaches focus on raising deaf students' levels of metacognitive and metalinguistic awareness, wherein the grammar of English is taught through comparative analysis or translation activities between sign language and English. These reported practices are assumed to support the students' developing model of written language by making its structure and rules transparent and by developing students' perception of the differences between the two languages (Akamatsu and Armour, 1987; Neuroth-Gimbrone and Logiodice, 1992). Other techniques of using sign language to directly support literacy development include the development of inference, prediction and analytical skills (Satchwell, 1993; Ewoldt, 1978); stressing context and background information (Andrews and Mason, 1991) and developing interpretation, questioning, paraphrasing and problem solving skills (Livingston, 1991).

### **3.3.4 A focus on metalinguistic abilities**

The most widely reported approach to literacy instruction within the sign bilingual context focuses on the development of metalinguistic abilities. Paul (1998) argues that the strong focus on metalinguistic skills has failed to capitalise on the visual motor aspects of sign language as a means of conveying essential grammatical information about English. He suggests that deaf students' sensitivity and competence with the visual parameters of sign language might be exploited to enhance their understanding of aspects of English syntax. He

proposes strategies for encoding information about English grammar within the sign language utterance by using a range of techniques such as:

- emphasising relationships between objects in space and direction of verbs to illustrate the grammatical concept of direct and indirect object,
- adding non-verbal cues such as body leaning to show agent-recipient relationships and to convey passive constructions,
- exaggerating physical parameters of sign to show progressive or indicative forms of verbs such as 'walk' and 'walking'.

These are hypothetical suggestions and their practical validity has not been evaluated. One of the problems which can be foreseen is that as language becomes more complicated it will not be possible to contrive clues within the signed utterance. It could also be argued that rather than manipulate the natural properties of sign language to create a contrived communicative situation it would be better to employ an established, complete representation system of English such as Signed Exact English. By doing this, the integrity of sign language itself will not be threatened and the communication in sign language can remain natural to support the English learning.

It is only relatively recently that educators have sought to consciously plan the use of sign language in the teaching of English and there is very little evidence available which investigates the interaction of the two languages of sign language and English in the English teaching process. A few isolated studies in the 1970s were the first to concentrate on ways to successfully use sign language to support English development. Crutchfield (1972) developed strategies for teaching English as a second language using ASL to provide examples of comparison between ASL and English grammar and language structure. Goldberg and Bordman (1975) developed an approach to teaching English as a second

language where English was presented exclusively in the written form and the students' preferred mode of communication was used as the language of the classroom. Since then, most descriptions of actual sign bilingual teaching have emerged from schools for the deaf in Denmark and Sweden or post 16 education in the USA.

Mahshie (1995) presents a comprehensive review of bilingual education in Denmark and Sweden. In this she reports on a teaching approach from Sweden which incorporates the use of a specially designed set of texts and parallel Swedish Sign Language (SSL) video tapes which centre on a deaf child and his family. Emphasis is placed on discussion and contrastive analysis of the grammar of the two languages rather than on word-for-word reading of the written Swedish. In this way, children are allowed to discover for themselves the contrasting and similar ways in which meaning can be communicated in both languages. The use of sim-com is avoided as teachers say that it is easier to talk about two languages when they are kept clearly separate. Mahshie reports that this approach does require a substantial knowledge of the structure of both languages from the teachers. Sign language skills are a prerequisite for the teacher training courses in Denmark and Sweden and inservice training is available in Sweden on learning Swedish as a second language. In addition to this, Sweden has a handbook which is supplementary to the National Curriculum which identifies aspects of Swedish grammar that deaf learners find difficult (Svartholm 1993).

In Denmark, approaches to literacy teaching also include contrastive analysis and translation work but spoken Danish is seen as being as integral to the development of literacy skills. The use of manually coded Danish for word-for-word reading aloud is accepted as transitional phase in learning to read. Hansen (1990) illustrates this in her description of the approach at Copenhagen School for the Deaf . The children work in groups to translate the



DSL story into a written Danish version and then practise reading the written version aloud, without sign support, following the teacher's indications of rhythm and phrasing.

Neuroth-Gimbrone and Logiodice (1992) describe similar teaching methods to Mahshie in their programme for deaf 14-15 year olds whose dominant language is ASL. The work in their programme is based on the premise that written English allows greater access to their second language than the spoken form. The central goal of this programme is to use the students' knowledge of their first language to help them to learn the second language through an emphasis on metalinguistic and translation skills. Metalinguistic skills are defined in this context as the 'ability to analyse and reflect upon one's own language' (p. 82). The ability to analyse the first language of sign language is seen a prerequisite for the development of second language English skills. A broader definition and discussion of metalinguistic ability is presented later in this chapter.

The success of this approach is only reported anecdotally but the group of students appear to have benefited from the concentration on analysis and translation skills to the extent that they became much more independent and reflective writers. The authors stress that this approach hinges on tapping into the knowledge that the students already possess about language and supporting them to apply that knowledge to the learning of a second language.

Erting and Pfau (1994) argue that deaf children as young as 5 - 6 years of age should be given opportunities to develop metalinguistic skills through language play and exploration. They provide anecdotal evidence of deaf children between the ages of 4 and 5 demonstrating their metalinguistic awareness through questions and comments about language and language use (punctuation, choice of a particular sign). Erting and Pfau stress that the onus is on the adults to facilitate these skills by talking explicitly about the two

languages and their differences. The central question that they pose is to what extent metalinguistic knowledge can contribute to growth in proficiency in both languages. The translation activity carried out in this study presents an empirical exploration of this question.

Hoffmeister (1994), contends that research into deaf children's knowledge of ASL synonyms and antonyms provides a truer picture of their linguistic potential. He argues that conclusions that are drawn about deaf children's limited breadth of semantic knowledge based on tests of English word knowledge are incomplete as the learner may well have a range of synonyms or extended meanings of the sign which is equivalent to the word tested. He cites the sign FINISH as example of a sign which can be translated directly into one English word but which itself has many different meanings and functions in different contexts. An earlier study by Gregory and Llewellyn-Jones (1992) also demonstrates the subtle changes that BSL users can make to the sign FINISH to convey appropriate aspect and completion information. Hoffmeister's study of 78 deaf children's knowledge of synonyms and antonyms in ASL demonstrated that students were, in general, able to tap into the metalinguistic knowledge required to respond to the task although they had received no formal training in this area. Hoffmeister speculates that formal training in metalinguistic processes, where ASL is the language of instruction, could greatly enhance deaf children's bilingual proficiency.

A study carried out by Neilson and Armour (1983) found that students who carried out linguistic analysis of ASL and translation work from their preferred sign system into written English benefited in both language areas from being made aware of their tacit linguistic knowledge. The benefits they describe include improved sign language skills, improved

comprehension of English through sim-com and improved reading and writing skills.

Akamatsu and Armour (1987) enlarged on this study by examining the effect on high school students of a programme focused on raising students' language awareness of both ASL and written English in terms of rules, comparisons and contrasting features. They used a teaching programme which combined specific instruction in ASL, transliteration and translation skills and editing written English texts. When they looked at the gains of this intervention over a 10 week period they identified improved awareness of rule systems of ASL and written language and improved writing at grammatical level. They argue that the intervention was successful in that it made the students more aware of the differences between written English, signed English and ASL.

The authors suggest that this should be tried with younger children but they note that the practicalities of such an intervention demand that the hearing adult must be proficient in ASL or work alongside a deaf adult and both adults need a working knowledge of how both languages are structured. This requirement is echoed by many other researchers in this field (Erting and Pfau 1994; Ahlgren 1990; Mahshie, 1995).

Schneiderman (1986), describes an approach which involves filming students' ASL descriptions and then asking the students to analyse how the information is conveyed in ASL. The students then jot down key English words and discuss as a group how to create the equivalent description using written English. This is a translation task which involves metalinguistic skills in the analysis of both languages. Schneiderman emphasises the need to draw on the linguistic knowledge that the students already have and she observes that improving the students' language skills is not the only outcome of this type of activity but

also as she describes ‘ a pride in the richness of their own ability to communicate’ (1986, p.52).

Support for more direct instruction in metacognitive strategies also comes from research into metacognitive skills and reading in deaf children. Within the context of this research metacognition is defined as the knowledge and control an individual has over his own thinking and learning which s/he is able to actively use in their construction of their understanding of text (Strassman, 1997). In a review of this research Strassman (1997) exemplifies metacognitive abilities as including knowledge about the demands of the task; the nature of the text; oneself as a reader and knowledge of the strategies available to the individual. Metacognitive control refers to the monitoring strategies a reader uses ‘to anticipate, to alleviate, or to remedy reading problems’ (1997, p.140).

Other researchers in this field have investigated deaf readers’ abilities for self assessment and for judging their feeling-of-knowing (Krinsky, 1990; Wood, Griffiths and Webster, 1981) and found that deaf readers have more difficulties in using these strategies to facilitate comprehension than hearing readers. Studies by Ewoldt (1986) and Strassman (1992) looked at deaf students’ understanding of what reading is and their own reading abilities and both conclude that they lack an independent schema of reading and rely on their teachers to overcome comprehension problems. Other studies indicate that deaf readers are able to use metacognitive knowledge and control but are infrequently given opportunities to develop these skills because of the limited perceptions of reading presented in the educational context (Ewoldt, Israelite, and Dodds, 1992; Andrews and Mason, 1991), which reflect deaf pupils’ ‘passive, unquestioning styles of learning’ fostered by current instructional practice (Wood *et. al.*, 1981, p. 145).

Studies which have looked at introducing teaching approaches which encourage the development of metacognitive skills demonstrate the effectiveness of such intervention techniques and point to a need for a greater focus on metacognition activities as a part of reading instruction (Akamatsu, 1988; Satchwell, 1993; Schirmer, 1995; Martin, 1993; Fox, 1994). Conclusions can be drawn from this research regarding the importance of extending deaf pupils' experience of reading and writing to include challenging material and to support this with direct instruction in the development of metacognitive strategies such as 'think aloud' and prediction and inferring techniques.

### **3.4 Problems with the research into sign bilingualism and literacy**

The research into sign bilingualism and literacy so far is problematic although several possibilities regarding teaching approaches are offered. The central issue concerns the evidence that early sign language development is facilitative for literacy development. The research presented in this area remains inconclusive because of the difficulty of controlling for other influencing factors which may affect a deaf child's literacy development. However, the conclusions that deaf children who have had the opportunity to communicate in sign language from an early age are generally more socially confident and academically successful are significant. It can be argued that from this more secure starting point there are greater chances of higher levels of achievement in literacy. What is not known is more precisely the influence of sign language on literacy development and the interaction between the two languages involved. Does sign language have a mediating role on the development of literacy skills and if so what is the nature of this role? It is anticipated that findings from this study will contribute to these areas of enquiry.

Where sign language becomes part of an English literacy teaching programme an emphasis on the development of metalinguistic skills dominates. Some encouraging reports have emerged from this body of research although most studies have so far been mainly descriptive. The argument for the development of metalinguistic skills has strengths and weaknesses. The strength of this approach lies in the potential 'translinguistic' nature of metalinguistic skills. It can be argued that the skills of analysis, reflection and critical thought that deaf children develop with regard to their preferred language of sign language can be transferred to support their learning of English literacy. Whether or not deaf children can achieve success in English literacy without a focus on the spoken form of the language remains a highly contested question even though the development of metalinguistic awareness and literate thought might be a more achievable goal of sign bilingual approaches (Paul, 1998).

The types of learning activities that feature in most of the sign bilingual literacy programmes described involve some translation, comparative analysis and discussion of the two languages. This approach offers conscious and supported practice in moving between the two languages and modalities of sign and text which deaf students are constantly tackling. Paul (1998) stresses the importance of translation as a metacognitive strategy as it provides structured support for moving between the two languages and modalities and presents opportunities to clarify English words and concepts in sign language. He stresses the importance of negotiation in this process, an element of most programmes described above, even with the younger age range of students. These types of activities potentially provide very valuable information about pupils' own perceptions of the two languages and how they relate to each other. In addition to this the interaction between teachers and pupils where two languages are being used should provide some very relevant information about the teaching and learning process in this context.

### **3.5 Metalinguistic abilities**

Metalinguistic proficiency has become a much used term in current discussions of sign bilingualism and literacy and yet what is meant by the term is not clear. For this area of development to continue to grow a definition and a description of the parameters of the concept of metalinguistic skills needs to be explored within the context of sign bilingualism. This study seeks to define and describe this concept within this context. The emergence of this concept can be explained by the changing nature of attitudes towards and research into bilingualism generally over the last 30 years. It is only more recently, however, that a thorough examination of the development of metalinguistic proficiency as one aspect of a bilingual person's language repertoire has been undertaken.

#### **3.5.1 Metalinguistic proficiency as a cognitive advantage of bilingualism**

Research has shown that bilingualism can have positive effects on cognitive development where both of the child's languages are respected and supported in the academic and social setting (Lambert 1975). It is argued that metalinguistic awareness is a natural concomitant of this type of 'additive' bilingualism because of the constant conscious and unconscious comparing and contrasting and inspecting of the two languages that takes place in the bilingual person's mind. Vygotsky's hypothesis that bilingualism facilitates certain types of language awareness has been supported by a number of other researchers. (Ben-Zeev 1977; Bialystok 1988; Diaz and Klinger 1991; Galambos and Hakuta, 1988).

(bilingualism enables a child to) see his language as one particular system among many, to view its phenomena under more general categories, and this leads to an awareness of his linguistic operations (Vygotsky, 1962, p. 110).

Among the cognitive advantages identified as resulting from bilingualism are enhanced communicative sensitivity (Lambert, 1975) and pronounced metalinguistic awareness (Galambos and Hakuta, 1988; Bialystok and Ryan, 1985). Metalinguistic awareness can be simply defined as the ability to think about and reflect on the linguistic nature of language use.

(...) the ability to attend and reflect upon the properties of language

Galambos and Hakuta (1988, p.141).

Examples of evidence of this special awareness include the individual's ability to attend to the form of the language rather than focus on the message in an utterance (Galambos and Hakuta, 1988). This research indicated that subjects who were more bilingual (i.e with generally high levels of proficiency in both languages) performed better on tasks requiring attention to the way in which language was structured and that a high level of proficiency in L1 contributed to enhanced metalinguistic awareness. Other evidence centres on the domain of literacy development. Goncz and Kodzopeljic (1991) report that bilingual children demonstrate greater success in the early stages of reading than monolingual children in terms of concentration on the task; their ability to connect sounds and syllables in words and to recognise that sounds and syllables are symbols.

Explanations of this pronounced awareness of certain linguistic forms can be explained in part by bilingual children's daily experience of trying to keep their languages separate so as to avoid interference (Ben-Zeev, 1977) and of comparing and contrasting the grammatical structures and vocabulary of the two languages (Lambert and Tucker, 1972). More information is needed about deaf children's ability to see their two languages as separate



and to make decisions about the most appropriate way to convey the same meaning in both languages.

### **3.5.2 The threshold hypothesis**

Cummins' (1997) threshold hypothesis would suggest that bilingual children are not likely to experience this positive effect on their intellectual development until they reach a high degree of proficiency in both languages. If this were the case, we would not expect minority language children in transitional language programmes and deaf children who are unlikely to reach balanced bilingualism to experience these positive cognitive benefits. More recent research has indicated however that these positive effects can occur in the early stages of bilingual language development where the child's levels of language proficiency are not balanced (Hakuta, 1987). However it must be recognised that the type of bilingual experience to which the child is exposed is one significant factor which will influence the development of an analytical approach to linguistic forms. As well as this, the age of the individual, their economic status and intellectual potential are also likely to play a part.

### **3.5.3 A model of metalinguistic proficiency**

Much of the research argument into metalinguistic abilities so far is weakened by the absence of a clear model of metalinguistic proficiency. Often the terms metalinguistic task, skill and awareness are used loosely without proper definition or criteria. Bialystok (1993) suggests that a definition of these terms should start with a consideration of the term 'meta' which usually refers to an aspect of knowledge about a domain in contrast to the ability to use that knowledge. She argues that criteria are needed to establish when a linguistic task transcends to the 'meta' level. Bialystok draws a distinction between metalinguistic awareness and linguistic proficiency in terms of representation of linguistic knowledge.

Linguistic proficiency is seen to be based on a representation of language which involves no awareness of how meaning is organised. By contrast, metalinguistic proficiency is described as being based on an analysed representation of linguistic knowledge where the learner is aware of relationships between language and how it organised and structured to convey meaning.

#### **3.5.4 The parameters of metalinguistic proficiency**

Bialystok (1991) argues that metalinguistic abilities are not a unique set of abilities which are only possessed by some language learners. She proposes instead that there are metalinguistic dimensions of general language proficiency which can be explained in terms of the language processing components of (i) analysis of linguistic knowledge and (ii) control of linguistic processing. Analysis of linguistic knowledge is the process through which the learner's mental representation of language evolves in that it become more formally structured and explicit. Control of linguistic processing involves the selection of certain linguistic information from the learner's mental representation of language so that attention can be directed to it for the purposes of a particular linguistic task.

Bialystok (1991) suggests that these processing components are central to the development of general language proficiency and that developing language proficiency in two languages results in the development of higher levels of analysis and control. The examples of learning to read in a second language and switching languages to accommodate different speakers are given as language demands which force the processing components of analysis and control to be developed. It is the bilingual learner's different processing experiences which lead them to develop the metalinguistic dimensions of language proficiency. This

explanation illuminates the relationship between bilingual proficiency and metalinguistic awareness.

Bialystok describes metalinguistic awareness as an extension of general language proficiency, and not a separate entity, which can be explained by the changes in children's representation of language throughout childhood which allows them to use language in increasingly complex and specialised ways. Within this framework Bialystok provides a definition which encompasses the notions of awareness, ability and task.

meta (...) describes a level of processing (metalinguistic ability) that presupposes certain qualities of the representation (metalinguistic awareness) and allows the learner to solve certain types of problems (metalinguistic task) (1993, p. 220).

What is interesting about Bialystok's exploration of this concept with regard to sign bilingual deaf children is the notion that this ability is an extension of normal language proficiency which is based on an increased ability in speaking, understanding and reading. Are deaf children therefore able to develop metalinguistic proficiency without these language skills in the second language? Given that metalinguistic awareness is not always characteristic of non-literate societies we must consider the implications of this for deaf children who do not have experience of a literate form of their preferred language. Is it possible for sign bilingual children to share the same reported linguistic advantages as other bilinguals? To explore these questions further it is necessary to consider what linguistic tasks can be devised which would require deaf children to demonstrate their potential to operate at a metalinguistic level.

### 3.6 Translation as a metalinguistic task

One particular language task which draws on the learner's abilities of analysis of linguistic knowledge and control of linguistic processing is that of translation as the learner has to work between both languages, searching for equivalents at the level of meaning. For this reason, it provides an appropriate research technique for part of this study.

Malakoff and Hakuta (1991) describe the different way in which bilinguals experience the world to monolinguals because they move between two languages:

(...) linguistic experience is spread over the two languages; experience is encoded in either of the languages and can be expressed in both languages, and information representation can be switched between the languages.

(1991, p.142).

They suggest that this experience is most intensified when a child is translating and that translation is an everyday activity for most bilingual children, particularly for bilingual children in two monolingual communities where translation may be more prevalent but code-mixing less so. They stress that despite wariness around the use of translation as a teaching and research tool most bilingual children can translate at some level. Bilingual children without special training in translation are referred to by Harris (1977) as 'naive translators' and he distinguishes between the 'natural translation' of these children with the professional and trained type of translation situation. This tacit knowledge and the naturally developed translation skills of sign bilingual children are the focus of this aspect of the study since the children in this study have had no formal training in the translation process.

Within the field of bilingual education, translation as a teaching strategy has been regarded with some caution for two main reasons. Firstly because of the emphasis placed on the importance of keeping the learner's two languages separate (Wong Fillmore 1982; Ramirez, 1980; Legarreta 1979; Swain 1983). Secondly, because of the notion that conscious attention to language learning does not promote language acquisition (Krashen, 1982). There is, however, a growing interest in translation and its value in the learning of a second language and as a research tool. Research now indicates that the conscious attention to language structure and vocabulary that is required by translation is beneficial for second language acquisition and that this type of knowledge is in fact necessary in order that the learner might reach native-like levels of proficiency in their second language. (Bialystok 1982; Uzawa, 1996).

### **3.6.1 The translation process**

Translation is normally concerned with the written word in contrast to interpretation which is concerned with the oral modality. Because the study of sign bilingualism involves the consideration of two language modalities as well as two languages it is necessary in the context of this study to broaden the use of the term translation. The term translation will be used in this study to describe the transfer of thought and ideas from the source language to the target language where either language can be spoken, written or signed.

Translation is essentially concerned with the notion of movement between languages where the emphasis is on preservation of semantic and stylistic equivalencies (Bell 1991, p.5). Bell explores this notion of equivalence further and suggests that equivalence can be sought in different degrees. He distinguishes between 'formal equivalents' where the semantic style of the text is preserved at the expense of its communicative value, and 'functional equivalents'

where the communicative value of the source language is preserved above the semantic style (p.7). In this study we are interested in the children's ability to preserve the communicative value of the main message conveyed in the source language of sign language in their written translation. This task presents very particular linguistic problems because the children are moving from a visual-gestural language to a written language. These problems will be discussed in greater detail.

Early models of the translation process identify three main steps in the process. The first stage is analysis of the source language, the second stage is the comprehension of meaning and the third is the synthesis of the information into the target language (Seleskovitch, 1976). More recent models of the translation process add that a part of the process takes place in the memory as the translator analyses the source language into a non-language specific semantic representation before synthesising that representation into the target language (Bell, 1991).

Two key demands of the translation process identified by Malakoff and Hakuta (1991) are comprehension of contextual meaning and metalinguistic awareness. Contextual meaning is concerned with the comprehension of the source language text as a whole within its full context. This deeper comprehension of the source language involves the integration of an understanding of the individual words, phrases and sentences which make up a sequence of language with an understanding of the meaning of the passage as a whole. Catford (1965) suggests that although the text can be analysed at these different levels, equivalence of meaning between the two languages cannot always be established on equal levels. This argument can be very well illustrated in the case of translating from written English to sign

language where the meaning of a written phrase such as he waited for a long time may be conveyed through one single repeated sign.

Even where translation is taking place between two closely related written/spoken languages such as French and Spanish, where word for word transpositions can be made from one language to the other, there is always some restructuring that needs to be done in the target language in the syntactic or lexical domains to ensure that a true translation equivalent is constructed.

Malakoff and Hakuta break down the process of translation further into 4 elements:

- i) comprehension of the vocabulary of the source language,
- ii) comprehension of the meaning of the source language message,
- iii) reformulation of the message in the target language,
- iv) judgement of the adequacy of the target language product.

They suggest that the reformulation and judgement stages operate at two levels as the equivalence of meaning between the two languages must be evaluated as well as the appropriateness of the sentence structure used to convey that meaning. They argue that translation embodies metalinguistic awareness because it requires the ability to recognise language as a system which has a particular structure which can be manipulated in a particular way in order to fulfil specific linguistic functions. It also requires the ability to reflect on the translated product and monitor the meaning conveyed and the appropriateness of the language forms used.

### **3.6.2 Children's translation abilities**

Malakoff and Hakuta (1991) suggest that levels of bilingual language proficiency and metalinguistic awareness are likely to be correlated in school-aged children in that children with well developed language skills in general are likely to have well developed metalinguistic skills. They also argue that translation proficiency should be seen as the product of 'an interplay between metalinguistic maturity and bilingual proficiency' (1991, p. 149). To illustrate this, they show how translation demands an understanding of the semantic differences between the two languages (bilingual proficiency) in the choosing of the correct word order and the monitoring of the appropriateness of the resulting translated product (metalinguistic awareness).

Malakoff and Hakuta report on studies of children's translating ability which demonstrate that bilingual children can possess translating skills by the age of 10 years. The studies indicate that the children's translation performance reflects their understanding of the communicative importance of conveying the correct message in the translation at the cost of sentence and structural errors. The studies support their claims that translation is a natural ability to be expected of bilingual children and that it has immense value as a research and language teaching tool:

- Translation activities tap metalinguistic skills.
- Translation activities amplify the bilingual skills of students.
- Translation activities enhance linguistic awareness and pride in bilingualism, particularly for minority language students.



The studies they discuss are particularly relevant to the sign bilingual context as they involve the consideration of a group of Puerto Rican children whose bilingual situation parallels that of the deaf children described in this study in the following ways:

- Their preferred language was not seen as a useful employment skill,
- English was perceived as the higher status language with greater economic value,
- The mothers reported very mixed language use at home

(Hakuta, 1988).

The 16 children (from 9 -12 years old) in these studies were all found to be very good translators and made few errors. Other interesting findings reported were that translating was more effective into English than into Spanish, perhaps reflecting the children's English dominance. While target language proficiency seems to be an important factor in translation efficiency, it is suggested that source language proficiency plays an even greater role as the unit of language needing to be processed gets larger. In addition to proficiency in the two languages there appears to be a more general translation proficiency which requires an additional skill of accessing the two lexicons. This research supports the hypothesis that translation ability is related to metalinguistic skills as translation ability goes beyond the sum of the two language proficiencies. Translation is described as a 'translinguistic' skill as it is not limited to any one of the bilingual person's languages Malakoff and Hakuta (1991, p.150). It is intended that the empirical aspect of this study will lead to the exposure of sign bilingual children's transferable metalinguistic skills through a translation task.

### **3.6.3 Translation as a research technique**

The use of translation tasks as elicitation techniques in research into second language acquisition has been questioned by a number of researchers (Dulay, Burt and Krashen,

1982). It is thought that this type of elicitation technique exacerbates inter-lingual errors such as errors in word order, grammar usage and pronunciation, because the learner becomes hide-bound by the structures in the source language. The language elicited from such tasks cannot therefore be a reliable source on which to base any hypothesis of the learner's acquisition of communicative skills in their second language.

It may be that where the research goal is to do with the acquisition of the second language that a translation task is not valid research technique. However, where the research focuses on the strategies the learners deploy to move between the two languages, translation tasks provide valuable insight into what processes are involved.

Several research projects have indicated that in the translation process the first or the source language has an important role to play (Bergman, 1976; Lindholm and Padilla, 1978; Swain and Werch, 1975). Positive links have been identified between the source (L1) and the target (L2) language such as the transfer of writing knowledge (Edelsky 1982; Jones and Tetroe, 1987) and the strategy of switching to L1 to aid retrieval of topic information (Friedlander, 1990). These findings add strength to the argument that translation provides a useful window into how the child views and uses the two languages when required to move between them. In this study, a translation task is an appropriate research technique which fits the identified research questions.

#### **3.6.4 Translating from a sign language to a written language**

A translation task was used for this research because of the need to explore the children's ability to switch their focus of attention back and forth between the two languages as they search for the correct translation of BSL into written English. One of the skills identified by Bell that a good translator should have is 'contrastive knowledge of the two languages in

different domains of use' (Bell 1991, p. 40). An analysis of the children's strategies to solve such problems should throw light on the nature of their bilingual skills. The translation task for these children poses the problem of moving across the two language modalities as well as across two languages. This problem will be explored by examining the main differences between signed and spoken languages.

The processes involved in translation from sign language to spoken language have been explored to some extent from the interpreting perspective. Interpreting involves the transfer of thought and ideas from a spoken or signed source language to a spoken or signed target language. These studies do not throw much light on what is involved in the translation process from sign language to a written language but they do discuss some of the implications of transferring meaning from a visual-gestural language to a spoken and written language.

Cokely (1992) compares translation with interpretation and suggests that a significant distinguishing feature of translation between texts is the permanent nature of both the source and the target language in contrast to the transient presence of the source and the target language in interpretation. The translating that is analysed in this chapter falls between these two processes as the source language is sign language and the target language is written English. This process must therefore pose a separate set of issues, the first being that the students are asked to work from a transient language to a permanent language and the second that they are being asked to work from a visual-gestural language where more than one idea can be communicated simultaneously to a written language, where ideas have to be expressed in a particular linear sequence. Although translation and interpreting share the goal of preserving the essential meaning of a message across the two

languages a very particular model of translation therefore needs to be defined for the process of translation from sign to written language.

Moving between sign language and the written form of English has been explored by Mayer and Wells (1996) although not strictly as a translation process. Nevertheless, this is a helpful model because it outlines the mental processes involved in preparing thoughts and ideas in sign language and writing them down in English. Uzawa (1996) suggests that second language writing and translation tasks involve the same cognitive processes. Language learners have been found to use their first language or translation as a stage in the process of writing in their second language as a means of compensating for their lack of vocabulary. It is also apparent that skilled and unskilled writers share characteristics with skilled and unskilled translators respectively in the way in which they approach and move around the source text.

The central problem discussed by Mayer and Wells (1996) concerning deaf children's experience of writing is that of the interdependence between the spoken and written forms of English. Inner speech is seen as an intermediary between oral speech and writing that is a means to rehearse, self-direct, mediate between written and spoken form. Inner speech is developed through oral speech and there is evidence to suggest that deaf children may not have inner language based on the spoken word but that some may have inner language based on the visual-gestural properties of sign language.

The problem with this is that the grammar of sign languages cannot be easily encoded into written English. Individual signs and words do not always have a direct one-to-one correspondence and there are several other features of sign language such as the use of non-

manual features, spatial location, movement and direction which require clear linguistic understanding if they are to be encoded in written English. By asking deaf children to translate from sign language into written English we are asking them to engage with this complex relationship between thought, sign and word and to try to reconstruct utterances in a visual-spatial language in a sequential organisation of written words which represent a spoken language to which they have limited access.

Mayer and Wells suggest that areas where deaf children might experience particular difficulties in moving from a mental representation in sign language to the written form would include:

- encoding in written English bound morphemes in sign language which are not represented by individual signs but through the manner or style of presentation of the lexical sign,
- representing the signed utterance in the correct English word order as in sign language the order of signs is not governed by semantic relationships and syntactic relationships but rather these semantic relationships are represented through spatial location, directionality and didactic gestures,
- capturing the non-manual signals which convey critical semantic and syntactic information in printed form,
- providing the context of the meaning, such as the attitude and intention of the characters or which can be conveyed in sign language through the use of spatial location.

In translating between a sign language and a written language the children are also likely to experience problems where they encounter information in one language which is not specified the same way in the other language. For example, adverbial information is often conveyed in BSL through the way in which a sign is produced, whereas in

English an adverb can be specified using an actual word. In addition to these language contrasts which may cause translation problems deaf children also have to find the appropriate written style which is different from how information might be conveyed in everyday speech.

Mayer and Wells emphasise the lack of a bridge between sign language and written language in terms of internal speech. In asking the learners to translate from BSL to written English it may be that the process is further complicated as we are imposing a source language of sign language which may inhibit their abilities to retrieve whatever inner representation of the spoken language they might have. One direction of the analysis of this process which will be revealing therefore will be the evidence of rehearsal either in sign language or in spoken language that the children go through in preparation for writing.

### **3.7 Conclusion**

These developments in sign bilingualism and literacy open up an interesting and promising area of pedagogy and research but at the same time raise many other questions. It is from this developing field that the research questions for this study have emerged. These questions underline the importance of developing an understanding of sign bilingualism and literacy by focusing on the nature of individual sign bilingualism and on the potential of metalinguistic awareness as a path to literacy development.

The main research question which emerges from this literature review asks what can be learnt about deaf children's sign bilingual language abilities, use and awareness through tasks which involve metalinguistic understanding and what are the implications of these

findings for literacy development? This question opens up three research strands or sub-questions:

### **1. What is the meaning of bilingual when we refer to deaf children's language skills and experiences?**

Sign bilingual children are different from children who are bilingual in two spoken in that they are learning to manipulate two languages across three modalities. A fuller understanding is needed of bilingualism with regard to these children's use of the two languages of sign language and English, across the different modalities. One outcome of this study will therefore be a redefining of the notion of sign bilingualism informed by the detailed study of six individual approaches to language learning. Particular areas of focus will be:

- the ways in which the children move between their two languages,
- the children's perception of the differences between their two languages,
- influences that that two languages have on each other,
- the children's emerging representation or model of English.

### **2. What constitutes metalinguistic ability in bilingual deaf children and can this ability support the children's development of literacy skills?**

It is argued that the development of metalinguistic abilities might provide deaf children with an alternative route into literacy. If we are to promote metalinguistic understanding as a transferable skill which can support deaf children's literacy development, we need to understand the nature of these abilities and how they are manifested in the sign bilingual context. This study therefore considers what metalinguistic abilities can be identified and seeks evidence that such abilities might support literacy development.

### **3. Can translation activities and comparative analysis work provide us with some insight into deaf children's sign bilingualism and metalinguistic abilities?**

Sign bilingual education has a theoretical, political and moral basis but lacks secure pedagogical foundations. Research development is needed which will provide more information about how sign bilingual children operate in two languages and which point to their language learning strengths. Because translation and comparative analysis work have been identified as metalinguistic tasks *par excellence* these activities will be used in the following empirical work as it is argued that they can provide the depth of information needed. One of the outcomes of the study will be therefore to appraise the value of these language activities as research techniques. It is intended that this approach to the methodology will shape a useful research tool for this area as well as provide information about individual learning behaviour.

The following Chapters 4 and 5 will illustrate how the methodological design of the study is shaped, through initial pilot work, to provide data in response to these identified questions.



### THE PILOT STUDIES

#### 4.1 Introduction

The pilot phase of this research was driven in part by the pedagogical issues involved in teaching English to sign bilingual deaf children. The first issue concerns the effective use of the two languages of BSL and English in the teaching context. The second centres on ways to promote the development of the children's literacy skills through BSL. The third is the problem of how to ensure full exposure to the English language in use alongside more formal teaching of the language based on the written form. Practitioners working with these problems often find themselves drawn to research into the bilingual language development of hearing children seeking relevant information about bilingual children's language learning processes and possible pointers for practice. One of the assumptions which prevails in this area is the notion that bilingual language learners are able to transfer skills from their first to their second language:

Developing oracy and literacy competencies in the first language will easily transfer to the second language (Baker 1993, p. 205).

This assumption is the stumbling block for those working with sign bilingual children because of the limited understanding available about being bilingual in two languages which are produced and perceived differently. The literature review has indicated that as yet there has been very little development of our understanding of sign bilingualism which might provide guidance for the development of a sound pedagogical approach. The question of how the notion of transfer might be relevant to the particular phenomenon of sign bilingualism provides the broad conceptual framework for this study.

## 4.2 A conceptual framework

The conceptual framework for this study is underpinned by theories which result from research into bilingual hearing children's bilingual language development. These support a personal view, based on practical experience, that the skills which are most likely to be transferable are meta skills and that sign bilingual children may possess language learning strategies which remain untapped in the teaching situation. Robson (1993) suggests that a conceptual framework should show how theory and previous research underpin a research study and demonstrate how this interacts with the researcher's tacit or intuitive knowledge.

Figure 5. below illustrates this relationship.

<b>Relevant themes in research into hearing children's bilingual language development</b>	<b>Viewpoints based on practical teaching experiences</b>
The first language provides the foundation for the subsequent development of the second language (Cummins 1991).	Sign bilingual deaf children are able to talk about language as long as they have a strong preferred language (either BSL or English).
Metalinguistic dimensions of language processing are enhanced in bilingual children (Bialystok, 1991).	Deaf pupils enjoy an analytical approach to language learning where they have the cognitive skills to interact about their learning and yet teachers are rarely explicit about their language teaching goals.
Language learning strategies and language awareness can be formally taught (Oxford 1990, O'Malley & Chaumot 1990)	Sign bilingual deaf children respond positively to being taught specific language learning strategies/techniques
Language skills are transferable from L1 to L2. (Baker 1993).	Deaf children often do not have age-appropriate BSL skills when they begin to learn English as a second language

The role of inner speech is central to the development of literacy (Mayer and Wells 1996).	Deaf children have difficulty acquiring extended reading and writing skills
Exposure to the second language being used for real purposes is a necessary feature of the second language learning environment (Krashen, 1982).	Deaf children's errors in their writing highlight their lack of access to the spoken form and opportunities for practising the language in use.
It is important to consistently separate the two languages being used in the second language learning environment. (Jacobson 1990).	BSL and English can be mixed and this mode of communication (speaking and signing) is frequently used in the learning context.

*Figure 5. Conceptual framework of the study*

This conceptual framework illustrates the gap between theory and practice since there is very little research evidence in the left hand column which relates specifically to sign bilingual deaf children. This emphasises the need for empirical work which focuses specifically on deaf children's bilingualism without necessarily comparing them with another bilingual group. Because of this lack of previous research exploratory pilot work was undertaken to inform the design of the main study.

### **4.3 Rationale for the pilot studies**

Exploratory pilot work was an essential starting point for the empirical aspect of this study for a number of reasons. It is on the basis of theories of bilingualism in two spoken languages that bilingual educational provision for deaf children has been developed. In reality, little is known about the process of sign bilingual language development given that one language is a spatial and visual language with no written form and the other a linear, written and spoken language. The conceptual framework for this study, based on

bilingualism in two spoken languages, therefore required further unpacking in order for appropriate research questions related precisely to sign bilingualism to be shaped. Because of the lack of previous research into this area it was also necessary for the realities of researching and collecting data in a sign bilingual educational context to be explored. Pilot work also enabled the pedagogically orientated problems to be focused as research questions. Pilot work was therefore an essential part of the process of constructing the central research questions and informing the design and direction of the main empirical work and analysis.

Two exploratory observational pilot studies were carried out which provided significant pointers for the main study. Because of the exploratory nature of the studies there is a limit to the significance of the conclusions drawn from the studies themselves. The detail of the findings is therefore only summarised here and emphasis placed on the important implications for the main study. Where more general statements are made in the discussion of the pilots, these are followed up in the main study. This chapter therefore provides an overview of the pilot work and focuses on the outcomes which were used to develop the main study.

#### **4.4 Aims of pilot study 1**

The first aim of the initial pilot study was to identify ways in which sign language and spoken or written English were used in the sign bilingual teaching context by both the children and the adults. The questions that this study addressed were:

- i) What range of languages and language modes are the pupils exposed to?
- ii) Are the different languages and language modes used for specific purposes by specific people?

iii) To what extent are the children exposed to language switching and mixing?

Language switching is defined in this context as the alternate use of two languages within the same utterance. Language mixing refers to the selection and use of items from one language within the structure of another. This usually occurs at a lexical level or within a sentence (Hoffmann, 1991).

The second aim was to provide an account of the children's language use in terms of the context in which they used BSL, spoken or Sign Supported English and where evident language switching occurred in relation to the demands of the learning situation. The questions addressed included:

- i) What does each child's repertoire of language skills consist of?
- ii) To what extent do the children use different language modes for different purposes with different people?
- ii) To what extent do the children mix and switch languages?

A third aim was to investigate the teachers' intentions and goals with regard to language use in a bilingual setting and their perceptions of the success of different ways of organising the use of BSL and English.

Finally, it was necessary to identify through the pilot work the types of learning situations which would provide further research data which would contribute to a greater understanding of the development of deaf children's sign bilingual language skills.

## 4.5 Methodology for pilot study 1

Three children were identified in three bilingual settings and were tracked through a typical school day. Children in the 7-11 age range, in classes with other deaf peers with access to both deaf and hearing adults in their educational setting were selected. The intention was not to match the children in any way but to use the individual tracking to experience the sign bilingual educational environment from a child's perspective.

One child from a school for the deaf and two children from different units within mainstream primary schools were observed. It was considered that across these two differing educational settings a sufficient range of current practice was evident for the purposes of this preliminary, exploratory research. The emphasis of the observations was in no way intended to be a systematic comparison but to highlight the varying ways in which the adults and the children used their range of language skills in this context.

To gain information about language exposure the start of each session throughout the school day was observed and video recorded for 10 minutes. Information about the individual child's language use was gained through a different 10 minute video recording made of each child interacting in each learning situation throughout the school day.

The video recordings were reviewed and the different types of language use employed by the teachers and the children were noted. The following categories, which will be discussed in more detail later, were used to organise this descriptive data:

### *Language use*

- spoken English (no visual support),
- BSL,

- spoken English with sign support,
- grammatically incorrect spoken English,
- written English,
- finger-spelling.

Where examples were noted about teacher or child language use information was also recorded regarding the intended audience in each case:

*Audience:*

- deaf adult,
- hearing adult,
- hearing/deaf child.

Examples were also collected of instances where children and adults switched between or mixed languages and the identifiable reasons for this were noted:

*Language switching and mixing*

- context and audience,
- language function,
- language content.

The observations were followed up by semi-structured interviews with the individual teachers concerned where the teachers were given the opportunity to explain the rationale behind their language use, the factors influencing their decisions and their perceptions of the success of various strategies of language distribution.

## **4.6 Findings from pilot study 1**

The children were exposed to a range of linguistic input throughout school life in the various different learning situations. The range identified below was evident across both the mainstream and school for the deaf settings although less spoken English was observed to be used in the school for the deaf. This was clearly influenced by the fact that the teacher observed in the school for the deaf was deaf herself and BSL was the language of the environment. By contrast, in the mainstream setting where the teachers observed were both hearing, English was more evidently the dominant language of the environment.

### **4.6.1 Spoken English**

Spoken English was observed to be used either with no additional support or with additional visual support. This is described as distinct from Sign Supported English because this use of spoken English always involved the use of conventional English grammar whereas the use of English with sign support often did not. Spoken English was consciously used by the hearing and deaf teachers in English teaching situations and for familiar/routine communication throughout the school day:-

- giving familiar classroom instructions,
- introducing and modelling new words and phrases,
- correcting the children's use of spoken English through repetition,
- asking familiar display questions e.g.; 'which one was yellow?'
- responding in one word or short phrases to the child's use of spoken English or SSE.



#### **4.6.2 BSL**

BSL was observed to be used by all the deaf adults involved with the children. Hearing teachers of the deaf were also using what they referred to as their 'best BSL' being aware of the limitations of their own skills as non-native signers. The term 'best BSL' has emerged recently in this educational context as the hearing teachers have become aware that in some teaching situations the use of BSL is more appropriate than the use of SSE. This has challenged the earlier assumption that all hearing adults should use SSE and deaf adults BSL as both deaf and hearing adults need to be more flexible to meet the needs of the children. The hearing teachers were therefore attempting to use BSL but were aware that they lacked many of the skills of native signers. The term 'best BSL' therefore indicates that the teacher was prioritising visual communication even though the actual BSL was less than perfect. The deaf and hearing adults used BSL and 'best BSL' respectively for parallel purposes:

- to explain new concepts and how they are expressed in BSL,
- to clarify instructions or explanations previously given in English or SSE,
- to clarify English meaning with direct reference to the written form,
- to elicit ideas and expand the children's contributions to a discussion,
- to check and extend understanding through questioning,
- to model new signs and correct individual expressive BSL,
- to model the learning activity and the response,
- to narrate events in a story,
- to manage behaviour.

In addition to this, the children were exposed to the use of BSL when discussions took place between the adults in front of the group about the activity.

### 4.6.3 Sign Supported English (SSE)

In the context of this study this can be described as spoken English which is supported by signs in context borrowed from the lexicon of BSL. Sign Supported English was observed to be used by the hearing teachers particularly in reading activities:

- reading aloud from text,
- clarifying word meanings and explaining the context in more detail,
- asking questions about the text,
- paraphrasing the English text.

Sign Supported English (without voice) was observed to be used by the deaf adults to read through text with the children and to model the spoken form.

### 4.6.4 Grammatically incorrect spoken English.

Spoken English used by hearing adults was sometimes observed to not conform to the standard grammatical conventions. This seemed to occur in quite specific contexts as described in the examples below.

- in response to the child's use of incorrect spoken English:

Child     'she copy at Matthew'

Teacher   'it doesn't matter, you copy at Michael'

- in the flow of an explanation being given in SSE (with voice) the English became telegraphic with word omissions:

Teacher   'remember Michael story about mole'

- during an explanation in SSE the spoken English word order became more like BSL

Teacher 'they thought how many people together in'

#### **4.6.5 Written English**

Written English was not observed to be used as an actual means of on-going classroom communication (e.g. instructions and explanations) but as a means of introducing words and phrases for the first time with a BSL explanation and also as a means of supporting the children's exposure to spoken English.

#### **4.6.6 Finger-spelling**

Very few instances of the children being exposed to finger-spelling were observed except for the initialisation of names and as an aid for the children to practice and learn the spellings of English words.

#### **4.6.7 Language switching and language mixing by the adults**

In terms of language switching the hearing teachers were observed to move between SSE and spoken English quite frequently in the English teaching sessions. For example an instruction would be given in spoken English and then the teacher would switch into SSE to respond to some written English but move back into spoken English to model specific words or phrases.

Other examples of language switching on the part of the teacher included instances where the switch was made from SSE to BSL. This was observed to happen mid-sentence where a teacher began an explanation in SSE then dropped the use of voice and incorporated more BSL features into the explanation. This also happened (less dramatically) mid-session, where a teacher began the session aiming to use as much SSE and spoken English as

possible with written support, but the children's need for discussion led the teacher to continue the session in 'best BSL' and abandon some of the English objectives.

The hearing teachers were also observed to switch languages according to the children's language use. If a child dropped the use of sign and began to use spoken English, the teacher would respond in spoken English with the use of sign support. Similarly, where a child moved out of English and pursued something with the teacher in BSL, the teacher would respond accordingly.

The deaf adults also switched between the two languages but to a lesser degree and for a more limited range of purposes. All the deaf adults were observed to switch languages in response to written English. One deaf instructor was observed to read his own text to the children using Sign Supported English (with no voice) and then to switch immediately back into BSL to gain the whole group's attention and discuss the text. The deaf teacher of the deaf was observed to introduce some written English using BSL questions and explanation and then to switch to SSE (with voice) to model the spoken form.

Language switching by the hearing teachers seemed to be used primarily to maintain interest and communication. The deaf adults succeeded in doing this by remaining with the same language. When the children did not understand, they were able to re-phrase and re-explain in BSL or add essential contextual details to their explanation to provide a cue for the children. The constraints that hearing adults were operating within included the potential limitations of their own language skills as well as the linguistic demands of the learning context.

#### **4.6.8 The children's linguistic repertoire**

This section of the pilot work focused on the children's language use throughout a school day and particular attention was given to the following questions:-

- i) What does the each child's repertoire of language skills consist of?
- ii) To what extent do the children use different language modes for different purposes with different people?
- ii) To what extent do the children mix and switch languages?

Although each child's repertoire of language skills was considered separately the significant outcomes of this aspect of the study are summarised here.

An acknowledgement must be noted of the difficulty for the hearing researcher to differentiate between the children's varying use of languages. Certainly some of the changes the children made between languages were very subtle and may not have been identified although an attempt has been made, through the use of video, to differentiate between English and BSL features used in the children's communication. For a more in-depth investigation of this area a detailed transcription technique needs to be devised which shows the separate and simultaneous use of two languages and this has implications for the main study.

Each of the three children observed consistently used BSL for communication with deaf children and adults in the classroom setting. For all three, access to the curriculum was through BSL. The differences between the three children in terms of their language use was most marked in their various strategies for using spoken English. The child who was able to express himself most intelligibly through spoken English was the one who engaged in a lot

of language switching between BSL and SSE. These switches occurred to accommodate the audience (deaf or hearing) or where the English required became too complex and so a switch to BSL would be made to continue (for example in the retelling of a story). The two children with less spoken language skills also switched between BSL and English but the switch to English involved the use of some vocalisation, English lip-patterns and word order and some finger-spelling. These strategies, although not resulting in intelligible spoken English, nevertheless marked a movement between the languages for very specific purposes (usually to respond to a hearing adult or peer). It was also noted that less switching between languages and mixing languages (SSE) was observable in the school for the deaf setting, presumably because English was not the language of the environment. The children met less spoken English incidentally and its use in the teaching context was more precisely managed by the adults.

From this preliminary evidence it seems likely that the children have an understanding of the differences between the two languages and are switching or mixing languages appropriately in different contexts for different purposes. What we cannot account for is whether or not the children have a conscious understanding of the differences or whether they are behaving intuitively.

The children were often in situations where their receptive and expressive English skills were called upon and this was dealt with by individuals in a range of ways. In this situation the children were obviously constrained by their verbal language skills. Further investigations into examples of this kind might provide some insight into the language learning process for bilingual deaf children and the relationship between their BSL and English skills.

#### **4.6.9 Teaching goals and perceptions**

All three teachers were interviewed after the observations and asked to comment on their own language use in different teaching situations and their perceptions of the individual children's language use. All teachers were able to identify their goals in terms of language use with regard to the individual children and were clearly trying to organise their language use based on certain principles even though this did not always go as planned in practice. Each teacher had evidently thought through the role of BSL, spoken English, and SSE in relation to each child and was aiming to follow particular rules with regard to language separation.

#### **4.6.10 Switching and mixing languages**

In response to questions about their own language switching both hearing teachers were aware that for various reasons switching between or mixing languages was unavoidable. For both teachers the purpose of switching languages given can be summarised as follows:

- to ensure understanding,
- to deal with the complexity of particular English phrases,
- to maintain communication,
- to include a wider audience.

The deaf teacher expressed far less concern in this area and did not cite as many instances of moving between English and BSL. This interesting difference might be explained by the fact that the teacher herself was confident in both languages and could offer either without conscious effort. The only example given was that she would sometimes model the English word or phrase for some specific curriculum terminology in the middle of a BSL explanation.

#### **4.6.11 Decisions about language use**

When the teachers were asked what contributed to their decisions about language use it was interesting to note that the hearing teachers' list included:

- aims of the session (focus on language or concepts),
- the setting (mainstream or small group),
- staffing (deaf and/or hearing adult),
- limitations of own BSL skills.

The deaf teacher was concerned only with the children's understanding and mentioned no other external or internal constraints. This may reflect differences between the actual teachers or the settings, or both.

All the teachers were asked about how they organised their language input when working as a deaf and hearing partnership. The two hearing teachers identified the occasions where they worked alongside a deaf adult as the teaching time which they felt made best use of their respective skills. Both teachers described the complex processes they were trying to develop to work from the children's knowledge and experience in BSL towards specific English targets based on this foundation. This particular situation was identified as one which needed careful planning in terms of language use. The teachers had thought this through and had clear goals in terms of their own use of spoken and written English.

The deaf teacher described the hearing person's role only in terms of a model of spoken English and her approach focused much more on BSL as the constant medium of instruction including in English teaching situations.



From these interviews it was evident that the teachers were working to a model of language development based on their understanding of the language needs of bilingual children. They were generally applying the principle of first things first, that is conceptual development in BSL alongside structured and supported exposure to English where the goal was to keep the languages separate as far as possible.

#### **4.7 Conclusions from pilot study 1**

The individual pupils were exposed to a range of linguistic input throughout the school day in different learning contexts, especially in teaching situations where the goal was English and where both BSL and English were being used by two adults. There was constant movement between the two languages and modes, particularly by the hearing adults although this did not seem to impede the children's comprehension.

These issues are significant in that they shape the methodology for the second pilot study. Because the adult language use can be potentially so varied and is generally tailored to meet the needs of the individual children it is not possible to identify broad general patterns of linguistic experience a group of children may have or indeed what the effects of certain patterns of language use might be. However, the fact that so much movement between languages is present is in itself worthy of further investigation.

The children's ability to accommodate the adults' differing language uses and to move between the languages themselves would suggest that they have a certain amount of linguistic flexibility. An understanding of the nature and extent of this flexibility would provide further insight into sign bilingual language development. More information is also needed about how children's different language dominances might affect individual sign

bilingual language development. To investigate this further a system for recording the children and adults' language use will have to be developed.

Despite the hearing teachers' clearly expressed rationale for their language use, they were well aware that what happened in practice did not match their own ideal because of a range of constraints including the context, the groupings, the staffing, their own skills and the difficulty of clearly separating the languages. The greatest pressure felt by all the teachers was the responsibility to make English accessible to compensate for the deaf children's limited exposure to the communicative use of spoken English in natural situations.

This range of pressures on the adults' language has particular implications for the next phase of the research. One implication relates to the direction of the research. Although the teachers are aiming to keep the languages separate the difficulties they have in doing this and the evident abilities of the children to adapt to the language shifting leads us to question whether or not language separation is a valid goal in this setting. If frequent language switching and mixing is a natural part of the daily interaction in this context then this in itself should be investigated as part of the repertoire of sign bilingual skills.

A second implication relates to the research methodology. If it were possible to keep the two languages of BSL and English entirely separate it might be possible to orchestrate or plan teacher language use more systematically. Since this has been shown not to be feasible a more valuable approach to the next stage of research will be to capture real instances of everyday communication in the learning context and analyse what is actually happening. This points to an emphasis on richly descriptive, qualitative data in the main study.

Finally, this pilot work identifies the English teaching and learning situation as the richest source of examples of the children's skills in manipulating both languages and so as the focus for the second part of the pilot research.

#### **4.8 Aims of pilot study 2**

The first pilot study provided a broad overview of the sign bilingual language environment. From the first pilot study the English teaching situation was identified as the one where detailed information about the children's ability to move between their languages could be collected. However, an investigation into what sort of data might be observable was necessary before the main study could be shaped. A focus on individuals was needed to consider the factors which might present future research problems and opportunities. The aim of the second pilot study was therefore to look more closely at a group of individual children's sign bilingual skills and to identify the approaches to language use and language learning they demonstrated when faced with a task which demanded some knowledge of English or a response in written or spoken English.

#### **4.9 Methodology for pilot study 2**

Three different English activities were observed with Year 3/4 deaf children across the two sign bilingual settings previously described (school for the deaf and mainstream unit). In each group one child was selected for the focus of the observation and their involvement in the learning activity was video recorded. The video recording also allowed for the teacher's involvement in the learning to be considered alongside the child's response to the activity. The details of the individual children, the learning activities and the adults observed are illustrated in Figure 6. below.

Setting	Adults involved	Learning activity	Details of focus pupils
Small group withdrawn from mainstream setting  English and BSL used as the language of instruction	Hearing teacher of the deaf and deaf adult  Hearing teacher manages and overviews the learning.  Deaf adult introduces the tasks and supports individual learning	Story prepared and rehearsed in BSL by deaf adult  Children asked to match English sentences to a sequence of pictures of the story  Children asked to read story back to the hearing teacher	<b>Child A</b> 10 years old Profoundly deaf Deaf mother, partially hearing father and deaf sibling Uses BSL and unvoiced English  <b>Child B</b> 10 years old Severely deaf Deaf father, hearing siblings and mother Uses BSL and SSE
Small group withdrawn from mainstream setting  English and BSL used as the language of instruction	Hearing teacher of the deaf and deaf adult  Hearing teacher manages and overviews the learning  Deaf adult introduces tasks and contributes to teacher interaction for clarification and exemplification, and supports individual learning	Familiar story prepared and rehearsed in BSL.  Children asked to contribute ideas for a group written story scribed by hearing teacher	<b>Child C</b> 8 years old Severely deaf Deaf father partially deaf mother, deaf and hearing sibling Uses BSL and spoken English  <b>Child D</b> 7 years old Profoundly deaf Hearing parents and sibling Uses BSL and SSE
Small group work in school for the deaf  English and BSL used as the language of instruction	Deaf teacher of the deaf and hearing adult  Deaf teacher manages all aspects of the learning activity  Hearing adult assists individuals and supports on-task behaviour	Children asked to compare two English texts, one written in the past and one in the present tense.  Teacher rehearses and consolidates focus grammar rule using the text in the past tense  Children asked to write their own text using the text in the past tense as a model	<b>Child E</b> 9 years old Profoundly deaf Deaf parents and sibling Uses BSL and SSE

*Figure 6. The situations observed for pilot study 2*

In the analysis of the video data evidence of the children's communication strategies and their more general approaches to the language learning activities were described in relation to:

- the ways in which the children used their English and BSL skills differently to respond to the demands of the language learning activity,
- the ways in which the children tackled the language learning task, particularly their reliance on the adults involved and response to areas of difficulty.

The children's strategies were not discussed in isolation but are considered in relation to:

- the specific demands of the task, what the children are being asked to do and what that actually entailed,
- the demands made by the adults in the interaction around the task and what this entailed for the child,
- the adult's language use throughout the task.

## **4.10 Findings from Pilot study 2**

### **4.10.1 The demands of the different learning activities**

The various learning activities observed placed differing demands on the individual children thus affecting the types of strategies of language use and language learning that they employed.

### *Matching English text captions to pictures*

This had a two-fold demand depending on the learner. For the more able reader it involved skimming and scanning for key content words and for the gist of each caption. For the less able reader it entailed reading 'aloud' in SSE with the teacher and then extracting the key points to complete the text matching activity. Ironically the adult support given to the less able readers actually complicated the task for them by adding a translation activity, leading to many examples of short-term or coping strategies. This activity would not therefore be appropriate to use for the next phase of the research as the potential support needed for reading may obstruct findings about the children's bilingual potential.

### *Collaborative writing.*

This task required the children to contribute to a shared writing activity scribed by the hearing teacher who requested that the children expressed their ideas in SSE or spoken English. This demanded that children knew some correct English structures and were also able to express them in a form of spoken English. This task stretched the children's production strategies although more discussion about what was acceptable as correct English could have developed the children's language learning strategies. This would not be an appropriate activity to use for the next phase of the research as it focuses largely on spoken language ability. Their participation in the task was more an indicator of the level of these skills than their understanding of how English works as a language system.

### *Comparison of two written English texts*

This task required the children to take part in a discussion in BSL comparing two English texts. A particular English grammatical rule was highlighted and then a model text was given full of examples of the rule in use. The children were then required to use the model text to construct their own English version. This task provided the most opportunities for

the application and development of higher order language learning skills. This was partly because of the way in which the children's learning was structured but also because BSL was used consistently as the language of instruction and for the discussion of English thus giving all the learners an equal opportunity to participate in the discovery of the workings of written English. This type of activity seemed to be the most appropriate means of gaining information about the children's perceptions of the similarities and differences between the two languages of BSL and English.

#### **4.10.2 The adult's interaction around the task**

Certain types of adult behaviour were identified which promoted the learners' full involvement in the task. Examples of this included:

- The adult confidently used BSL for full explanation and discussion of English and where the written English was used as the model. This responded to the need to expose the learners to a good English model but avoided the potential confusion of language switching and mixing.
- The adult focused on the processes involved in the task not just on the outcome and encouraged discussion and explanation. This did not place heavy demands on the children's language production strategies but required them to approach the task analytically.
- The adult carefully structured the activity for the learners ensuring that there was no risk of failing and allowed them to gradually become more confident and independent in their use of English using the written models provided.

In contrast to the above findings, certain types of adult behaviour did not facilitate the children's full participation in the learning activity and tended to result in the learner's use of more short-term or coping strategies. Examples of this included:

- The adult engaged in frequent language switching and mixing which was not signalled or explained. This might potentially cause the learner to become unsure about the language use required of them in response to the task.
- The adult attempted to explain correct English rules using incorrect spoken English themselves thus providing the learner with incorrect examples on which to base their developing model of English
- The adult focused on the written or spoken outcome of the activity rather than on the process providing fewer opportunities for the learner to gain information about language structure and meaning.
- The adult made complex demands of the learners and gave them conflicting messages about the value of their BSL contributions in an English activity. This seemed to discourage them from exploring language in a meaningful way and resulted in more attempts to produce the correct English word or phrase. We cannot be sure that the learners really understood the significance of their choices.

These preliminary findings are not intended to lead to a strict division between more and less facilitative adult behaviour but to highlight issues regarding the role of the researcher in the next phase of the research. The main issues concerning the adults' use of language and teaching focus will be addressed in the main study.

#### **4.10.3 The children's approaches to the language learning activities**

It became apparent through the pilot studies that the deaf children observed had developed certain strategies for dealing with the English language demands of the classroom. For the purpose of the main study it was felt to be important to try to distinguish between a short-term strategy or coping device and genuine understanding of and participation in the task



(long-term strategy). An attempt has been made here to distinguish between these using the pilot observations so that consideration can be given to designing the main study to elicit more long-term strategies wherever possible.

### *Short-term strategies*

Production strategies were the devices used by children to respond to the immediate demands of a task which drew mainly on their communication skills. These were largely strategies for getting through the task which focused on the outcome and relied on mechanical rather than meaningful responses to the activity. It seems unlikely that these strategies contributed to the longer term acquisition of English, although an impression of coping with the task was given. Some examples of this approach included:

- In reading 'aloud' the learner finger-spelt all the function words and articles and verbs where no transferable equivalent exists in BSL. The learner relied on teacher prompts and the pictures to provide an adequate response to the text but did not demonstrate any real understanding of what was being read.
- In a shared writing activity the learner used trial and error and whatever cues were available to contribute a correct English structure by either repeating something already written on the board, repeating part of the adult question or one of the choices offered by the adult.

### *Long-term strategies*

These strategies seemed to exemplify a more meaningful approach to the completion of a task and so it can be speculated that they are more likely to lead to longer term benefits in terms of the acquisition English. These strategies demonstrated some measure of independence in the child's handling of the language task and their ability to use the cues and resources available to him or her. These strategies demonstrated an ability to

consciously reflect on language and to try out previously learned language structures or rules in different contexts. These strategies were essentially restricted to a particular language task or learning context but could be exploited and expanded by the adults thus enabling the children to transfer them to other language learning situations. Some examples of this approach included the following:

- The learner made conscious choices about how to tackle a particular language task and adopted a systematic organised way of working.
- The learner discussed their own strategies for remembering spellings with the teacher.
- The learner labelled the two languages, talked about the meaning of written English and compared two English sentences in BSL.
- The learner attempted to apply a recently learnt English rule in their own writing.

#### **4.11 Conclusions from the pilot studies**

From this pilot work it is possible to draw some initial conclusions about the sign bilingual language environment and the deaf children's language learning strategies which provide the basis for the methodological approach and design of the main study.

##### **4.11.1 The children as language learners**

The children in this pilot work were obviously aware of the two language systems and were all able to move between them adeptly according to adult language use and the demands of the task. For the most part the children operated successfully and flexibly within a language learning environment where the goals of language use and the reasons for language switching and mixing were not always clear. Although the switching and mixing of languages was mostly purposeful, it would be interesting to know if more explicit markers

and explanations of adult language would enhance their language awareness and their ability to separate the two languages.

It is clear that the children had various strategies for coping with the demands of the bilingual situation and we are only just beginning to appreciate the range of language learning resources that they are able to deploy. More information about their developing strategies would give us greater insight into the processes involved, for a deaf child, learning English as a second language so that we might extend and build on these identified strengths.

#### **4.11.2 Implications for the teaching of English**

Teachers are clearly striving to provide adequate exposure to the spoken form of English for the learners alongside more formal English teaching. This often results in a confusion between BSL and English and a less than perfect exposure to English coupled with a less than perfect explanation of the structure of English. The meaningful exposure to spoken English that teachers can provide in the classroom is unlikely to be sufficient to enable the children to develop the English skills to the high levels required for success and achievement in the mainstream hearing society. Teachers therefore need to explore how the written form might be more successfully exploited as the model of English combined with a more extensive and confident use of BSL to discuss and explain languages.

#### **4.11.3 Implications for the next phase of research**

This pilot research emphasised the need for more information about the children's bilingual language abilities, their perceptions of the languages they are working with and their understanding of differences between them. The pilot work also raised certain issues about the methodological design of the main study.

Deaf children cannot be considered a homogenous group in terms of either their linguistic skills or experiences. The most appropriate approach to the main study therefore is to develop individual case studies. Although this compromises the generalisability of the research it does allow for richly descriptive data to be collected and analysed. The sample of children selected must reflect a range of skills and language dominances so that the data provides information about the diversity of sign bilingual language development. It is intended that implications will be drawn from these findings which will be relevant to the wider group of bilingual deaf children.

The difficulty of controlling classroom activity for research purposes and the variability of teacher style and language use has been highlighted by the pilot work. However, certain learning situations, where the children have to move between their two languages do seem to present ideal opportunities for data collection and analysis. The main study will therefore incorporate these types of learning activities but organise the structure and delivery of them in a way which ensures that all of the children are experiencing the same task.

Because of the evident difficulty of observing and recording the diverse language use taking place within a learning situation these activities will be video recorded so that the interaction can be transcribed and language use analysed. Because the ways in which individual children use their two languages to respond to English tasks has also been identified as significant, a full transcription technique will be developed for the main study which will enable the children's and the adults' language use to be fully recorded and analysed. These issues will be discussed in detail in the next chapter which presents the rationale for the research methodology for the main study and describes the procedures undertaken.

### **THE MAIN STUDY**

#### **5.1 Introduction**

The findings from the pilot studies provided a clear indication of key research issues and this shaped the research questions and the design of the data collection techniques for the main study. The pilot work yielded information about the individual deaf children's language learning strategies and language awareness and the analysis of this provided indications of what sort of structured language activities would stretch this potential in each child and provide further evidence of these strategies.

The pilot studies indicated that, because the teachers were so involved with the English language instruction and the overall management of the learning environment, it was not realistic to expect them to deliver a task designed by the researcher in a uniform way. It was also unrealistic to expect them to be able to monitor and analyse their own, and the children's language use during the learning activity. Because of this teacher variability, it was decided that the researcher would work with the children and deliver the structured language activities which were designed to elicit the required data and that this process would be video recorded.

One of the more far reaching findings from both of the pilot studies concerned the individual nature of each deaf child's bilingualism and the impossibility of evolving clearly defined categories which might be generalisable to all sign bilingual children. This factor prescribed the need for richly descriptive case studies to be developed to discuss each individual's bilingualism with the intention of identifying issues which would be significant for all sign

bilingual children. A need for qualitative data was therefore identified as this type of data is more likely to provide insight into behaviours and processes than quantitative data. The qualitative data collected is intended to provide a snapshot of individual children's experiences of learning and moving between two languages which will inform continued research and development in sign bilingual education.

## **5.2 Methodological rationale**

### **5.2.1 Grounded theory approach**

The exploratory nature of this thesis embraces a grounded approach to the development of our understanding of the little understood phenomenon of sign bilingualism. The most relevant theoretical basis for this work is the body of research into the language skills of bilingual hearing children and because of the differences that sign bilingualism entails it would not be appropriate to simply seek to verify any one of these theories, although this established conceptual framework has been used to develop an appropriate methodology. To work solely on previously derived theories from this source may result in different or unexpected or different evidence being overlooked or misinterpreted. The conclusions drawn from this study are therefore grounded in that they arise from the interpretation of the data (Glaser and Strauss, 1967). For new analytical concepts to be developed it is essential that the research methodology leads to a collection of rich data. The data collection techniques are creative, but specifically designed using information gained from the pilot studies, so that this richness and variety of data is allowed to emerge.

### **5.2.2 The use of case studies**

This study is concerned with 'investigating a phenomenon within its real life context using various sources of evidence' (Robson 1993, p.146). The phenomenon which is being

investigated is bilingual language learning as experienced by sign bilingual children. A set of 6 individual exploratory case studies with clearly defined techniques for data collection are used in this investigation. It is recognised that studying 6 rather than 1 case study will still not lead to opportunities to generalise about all sign bilingual children but rather, as Yin (1989) states, that different results will be achieved which will facilitate the generation of a theory about sign bilingual children's language learning strategies. Data on each of the children is collected over the period of a full academic year which allows for a comprehensive picture of each child's sign bilingualism to emerge.

### **5.2.3 The subjects**

Six primary aged children, in two bilingual settings (three children in each) were selected as subjects for the study because they all used both BSL and English for learning and for socialising at home and at school, and so could be considered to be bilingual to varying degrees. These children were also all in a bilingual educational programme where deaf and hearing adults worked together and where both BSL and English (spoken and written) were used in the teaching situation. The children had varying degrees of hearing loss (2 moderate, 2 severe, 2 profound) and although this will be considered in the analysis, the main criteria for the choice of the subjects was the functional use of both languages in the learning context. Each subject is individually profiled in brief below. These background details are intended to provide an overview of the range of skills of the subjects as well as some basic information regarding each child. Fuller profiles of each child, particularly with regard to their use of BSL and English, are included in Appendix 1. Further details of how each child used their constellation of skills to tackle the English tasks in the study are discussed in Chapters 6 - 9. The information for each profile was gained through interviews with both the hearing and the deaf adults regularly involved with the individuals concerned. Because there were no established norms for deaf children's BSL development at the time the

research began, the profiles are necessarily descriptive rather than a report of test scores.

This descriptive information is essential for analysing and interpreting each child's response to the language tasks involved in the study.

#### 5.2.4 Individual profiles of subjects

##### **Profile for Nicola**

**Aged 8 years (Y3)**

**Family details:** only child of hearing parents

**Profile of deafness:** severe, bilateral sensori-neural deafness since birth

**Language use in school:** access to aspects of the school curriculum most successfully achieved through BSL; spoken English use consists of lip patterns and some vocalisation in English word order; speech not fully intelligible to an unfamiliar adult.

##### **Profile for Lucy**

**Aged 8 years (Y3)**

**Family details:** partially hearing mother; hearing father and sibling

**Profile of deafness:** profound, bilateral, sensori-neural deafness since birth

**Language use in school:** access to aspects of the school curriculum most successfully achieved through BSL; influence of English present in expressive BSL skills; spoken English consists of intelligible speech with appropriate intonation and pitch; demonstrates some knowledge of English sentence and grammatical structures.

##### **Profile for Simon**

**Aged 8 years (Y3)**

**Family details:** hearing parents and siblings

**Profile of deafness:** moderate, sensori-neural, bilateral deafness

**Language use in school:** access to aspects of the school curriculum most successfully achieved through BSL although influence of English present in expressive BSL; spoken English consists of intelligible voice with appropriate lip patterns and word order, although not always grammatically correct.



**Profile for Jake****Aged 8 years (Y3)****Family details:** hearing parents and sibling**Profile of deafness:** profound, sensori-neural, bilateral loss since birth**Language use in school:** access to aspects of the school curriculum only achieved through BSL; confident receptive and expressive BSL skills but very limited receptive and expressive English skills; spoken English consists of lip patterns and some vocalisation using only basic grammatical and sentence structures.**Profile for Hannah****Aged 8 years (Y3)****Family details:** partially hearing mother, deaf father and sibling**Profile of deafness:** severe, bilateral, sensori-neural deafness since birth**Language use in school:** undergoing transition from accessing the full curriculum through BSL to accessing most of the mainstream curriculum through English with some sign support; spoken English consists of intelligible use of voice with appropriate lip patterns with increasing grammatical accuracy; currently in expressive language use she switches to BSL from spoken English if she cannot express the complexity of what she wishes to say in spoken English.**Profile for Mark****Aged 8 years (Y3)****Family details:** hearing parents and sibling**Profile of deafness:** moderate loss, elective deafness queried**Language use in school:** can access full curriculum through English with sign support but prefers discussion and explanation through BSL; spoken English consists of strained but intelligible use of voice with appropriate lip patterns with increasing grammatical accuracy; prefers to use Sign Supported English.

It is worth noting that 3 of the 6 children had significant spoken language skills even though they benefited from BSL input for specific purposes (Hannah, Simon, Mark). It may be that these three were in a transitional stage, at the time of the research, where the preferred language was shifting from BSL to English, but at the time of the research this was not clear cut. The other three children in the study had only limited spoken language abilities and so the dominance of BSL was easier to recognise. What is important is a recognition that this

mixed profile of subjects and the inconclusive descriptions of their preferred language is likely to be representative of other cohorts of deaf students and it is this diversity that needs further exploration.

#### **5.2.5 The research context: a sign bilingual educational setting**

A fuller description of the context of this research is essential as it explains the factors which influenced the methods of data collection. The research took place within a Local Education Authority service for deaf pupils which has a sign bilingual policy.

Following the pilot study it was decided that children from the school for the deaf would not be included for a number of reasons. Firstly, it became clear that individual child studies would be needed and that because of the differences between the individuals there would be no opportunity to draw any conclusions about the different effects of the different settings. Secondly, within the integrated service it was possible to identify 6 children with contrasting English and BSL profiles and therefore this setting provided the diversity needed. Because of the researcher's professional contact with the integrated setting it was possible to work regularly with the teachers outside of the classroom situation and therefore control the preparation of the tasks. Finally, the researcher was also well known to the children in the integrated setting which allowed for work to be carried out with the children which they considered to be part of their normal routine.

The Deaf and Hearing-Impaired Support Service concerned has a sign bilingual policy which promotes the role of deaf adults and British Sign Language in the education of deaf children. The development and use of BSL is encouraged through the employment of deaf native-users and hearing staff proficient in sign language. The deaf adults within this service receive regular training. This training focuses on the development of their specialist

knowledge and skills (e.g. BSL assessment procedures, deaf studies curriculum development) but also the development of their mainstream education knowledge and experience (e.g. codes of practice, Government strategies). The hearing staff also have access to regular training and staff development opportunities and are encouraged to contribute at a national level to relevant research and development work. There is an acceptance among the service staff that there are no straightforward answers or formulas for developing deaf children's English literacy skills through BSL and therefore new ideas and experimental work are essential. The service promotes a sociolinguistic rather than a disability model of deafness and focuses on the linguistic preferences of the individual child rather than on the audiological descriptors.

The sign bilingual section of the service operates within 4 mainstream schools throughout the city which are resourced for the education of deaf children (1 nursery, 2 primaries and 1 high school). Two special schools are also resourced for deaf children with complex needs. Each school has what is described as a 'resourced base' which is the area of the school which accommodates the deaf children and staff. This base is seen at once as a distinct but inclusive part of the mainstream school. The service also has a preschool support team and a post 16 sector and so is equipped to provide consistent bilingual educational support before, throughout and beyond a child's school life.

This research took place in two of the resourced primary schools where there were 12 - 15 deaf pupils in each school across the age range who all needed access to BSL, to differing degrees, for their educational, linguistic and social development. Each base was staffed by a combination of hearing teachers of the deaf, deaf adults and special needs assistants depending on the numbers and the groupings and the identified needs of each individual. All of the pupils worked with a hearing and a deaf adult on a regular basis and the specific pupil

timetables, regarding amount of time in mainstream and the type of support or small group teaching required, reflected individual linguistic, curriculum and social needs. The teaching approach used with each individual or group also varied according to preferred language, the focus of the support and the curriculum requirements. Both BSL and English were used as appropriate (spoken, written and sign supported form) as the languages of instruction and as areas of learning in their own right.

The group of 6 children concerned (3 in each primary base) spent approximately 50% of their school week in the mainstream classroom with support from either a deaf or a hearing adult as appropriate, with the goal of accessing the mainstream curriculum. The remaining time was spent in the resourced base where specific English language teaching took place as well as pre and post support work for the mainstream curriculum, BSL instruction and deaf studies. The two groups of 3 children both had a deaf and a hearing adult assigned to them and worked with one or the other or both, on occasions.

The staff involved with these two groups were particularly interested in the development of the children's literacy skills and in ways in which BSL can be used to support this process. They had recently been involved in a larger scale research project into sign bilingual education which had caused them to reflect upon the teaching approaches and their use of the two languages of BSL and English. As a result of this another preoccupation of the teachers was the separation of the two languages in the teaching context and the pupils' developing awareness of the differences between them. Because of this goal the two teachers involved with this project were already beginning to look for teaching activities which supported the pupils' developing understanding of the separateness of the two languages. This frequently involved asking pupils to translate between the two languages although this term was not specifically used. The teachers were able to talk about the

pupils' awareness of the differences between the two languages by providing anecdotal evidence although few activities focused specifically on this had been attempted. Focusing on the comparative structures of the languages as a goal in itself had not yet been tackled by the teachers although the potential of the children to cope with such tasks was already emerging.

#### **5.2.6 The researcher's role**

Prior to commencing this study the researcher had previously worked as a teacher in both settings with all of the children and staff. The researcher also co-ordinated the weekly professional development sessions for the teachers where the focus was on the teaching of English as a foreign language to deaf children. The researcher was therefore fully aware of the current ideas and issues regarding the English teaching that the teachers were grappling with. This familiarity with and understanding of the research context and the children facilitated the design of language tasks which were appropriately matched for the linguistic needs of the individual children. Prior experience of working with the pupils was also valuable preparation for interpreting the children's responses to the task and differentiating between problems associated with the pupils linguistic abilities and those associated with the task format and instructions.

#### **5.2.7 Similarities with action research**

Although the researcher worked with the individual children on the data collection activities, the teachers of the children played a significant role in the planning and reviewing these. The teachers were interested in learning more about the children's linguistic potential so that they might adapt and develop their teaching strategies. The collaborative nature of this study points to an action research approach in that, the study aims to address some of the practical concerns of teachers regarding the teaching of English (Rapoport 1970;

Stenhouse, 1985, Whyte, 1984). However, although the study shares these characteristics with action research, the direct emphasis on exploring a particular situation rather than on action for improvement distinguishes it. The development of classroom practice is a by-product of the study rather than a central goal.

### **5.3. Methods of data collection**

The exploratory pilot work prompted the development of some pre-structured data collection techniques. The pilots provided a preliminary guide as to what might be expected to emerge from the data collection and what the researcher should be looking for. These case studies therefore have a tight design where selectivity in terms of data collection is built in through the development of the structured tasks. The purpose of the systematic tasks was to develop and inductively derive grounded theory about the phenomenon of sign bilingualism (Strauss and Corbin, 1990).

Three structured language tasks were designed which were intended to elicit the specific data needed in the following areas:

- strategies that the children used to move from one language and one mode to another and how these strategies were influenced by their preferred language,
- strategies that the children used to manipulate written English and in what way these strategies were influenced by their knowledge and skills in BSL,
- evidence of the children's metalinguistic skills,
- evidence of the children's understanding of the separateness of the two languages and their understanding of how the two languages do or do not relate to one another,

- evidence of the children's individual language learning strategies and style or approach to language learning,
- evidence of the children's emerging model or representation of English.

Other supporting information was gained through interviews with the children and with the deaf and hearing adults involved in their education on a daily basis. Structured tasks were used to elicit focused data about how the deaf children responded to specific linguistic problems. The pilot studies demonstrated that attempting to obtain this data from observing natural samples of the learner's behaviour in language learning situations was unreliable, time consuming and not sufficiently controlled to provide the richness of data needed. The effectiveness of the elicitation techniques is discussed in Chapters 6 - 9. The use of elicitation techniques of this nature within a case study frame work is very much a common feature of second language learning and applied linguistic research (Nunnan, 1992, p.136).

### **5.3.1 Elicitation techniques**

Dulay, Burt and Krashen (1982) suggest two dimensions involved in language elicitation tasks; the task mode (the language in which the task is expressed and in which the pupils are expected to respond) and the task focus (the focus required of the subjects performing the tasks i.e. on the message, the idea, the opinion or linguistic forms or rules of the language used in the task). They also make a distinction between natural communication tasks and linguistic manipulation tasks. A natural communication task focuses the student on the message or the content of the language rather than on the language form itself. Data generated by this type of task can lead to findings concerning the subjects' normally developing language. The data generated from linguistic manipulation tasks on the other hand give information about the subjects conscious knowledge and ability to manipulate the workings of a language i.e., metalinguistic awareness. In these terms this study involved the use of two linguistic manipulation tasks, namely, translation and comparative analysis work.

Elicitation techniques have been used to some extent in sign language research to generate specific data about sign language grammar and usage. Liddell (1978) asked his subjects to translate a written English sentence into BSL. Unlike this research study Liddell's focus was on the content of the BSL and not on the strategies the subjects deployed to move between the two language. Liddell was concerned to eliminate as far as possible the influence of the English structures in the informants' ASL utterances by giving them several days to consider their translations. In contrast to Liddell's work the focus of this study is the analysis of what the translation process elicits rather than the use of translation as a means to an end. Cicourel (1973) also used a translation technique to attempt to elicit data about sign discourse but he also encountered difficulties with the interference of the actual translation process. Although other researchers have analysed deaf children's writing where preparation has been in BSL these studies do not actually consider the translation process (Gregory, 1997; Neuroth-Gimbrone and Logiodice, 1992; Jones, 1979).

It is stressed that structured tasks in this study were only experimental in the sense that the pupils were put in a new learning situation so that their strategies for coping with the tasks could be elicited and observed. The language demands of each activity reflected the typical language demands placed on the children in the school setting although the activities necessarily concentrated this experience for the purposes of the research. The structured tasks were not experiments in the strictest sense as defined by Robson (1993), in that they were not attempting to measure the effects of the manipulation of one or more of the variables. It was not possible to control the variables involved such as each learner's level of language competency and aptitude towards the task. The structured tasks were intended to elicit richer and more concentrated data about the processes of language learning than unstructured observation would yield.



From the literature review it emerged that one strand of literacy teaching currently being developed with sign bilingual deaf children involves translation and comparative analysis work. The reported research and practice suggests that deaf children will benefit from working on the explicit differences between the two languages and thus developing their metalinguistic skills. Where this work is being undertaken, namely in Scandinavia and America, claims are made about the improvement of deaf pupils language awareness and the impact of this on their general literacy development. Since one of the goals of the study is to define more closely the nature of deaf children's metalinguistic skills it seemed appropriate to adapt these developing practices for data collection.

### **5.3.2 Elicitation activities**

#### **a) Translation and non-translation writing activities**

The children were asked to view a BSL story on video being told by a familiar native sign language user. This was done on a 1:1 basis with the researcher. The children were asked to watch the story and write their English version. The tape was reviewed as often as they requested. Any help they requested was given and noted. To provide a contrast and a control for the written outcomes of the translation activity the children were also asked to write a story from a short sequence of pictures. This activity was intended to provide an opportunity to contrast the children's writing from two different stimuli so that BSL influences on the children's writing might be identified. This work had been previously piloted with the children by their teachers in the two groups which informed decisions about the appropriate length of the BSL and the written story.

#### **b) Comparative analysis activity**

The children were shown a different BSL story from which individual BSL signs and phrases were highlighted and repeated so that they were easily identifiable. This was done

on a 1:1 basis with the researcher .A written version of the BSL story was then given to the children and they were asked to comment on whether or not equivalent meanings could be found in the written text for the BSL signs or phrases highlighted. The children were then requested to repeat this process but with the written story as the source. Words and phrases were highlighted in the written story and they were asked to comment on the presence of equivalent meanings in the BSL version.

When a particular BSL sequence was highlighted in the story or on the video tape, the researcher then asked if there was anything the same as this phrase in the other version of the story. The children were given the choice of responding to these questions using one of the following replies which were explained in BSL, spoken English or SSE as appropriate for each individual. The choices given were:

- There is nothing the same in the English.
- There is something exactly the same in the English
- There is something a little bit the same but a little bit different in the English.

The children were asked to enlarge upon their answers with explanations wherever possible. When they responded positively the researcher asked them to identify the part of the text or tape which they were equating with the source phrase given. Because this type of task was quite new to the children a similar activity was piloted using different materials. The researcher worked with each child individually and each session was filmed for the purposes of transcription and analysis.

### **5.3.3 Interviews**

The interviews were intended to provide supplementary information. This was done on a 1:1 basis with the researcher. The researcher interviewed the children asking them about:

- their language use at home and at school,

- their perceptions of the meanings of ‘hearing’ and ‘deaf’,
- their perceptions of the differences between BSL and English.

The researcher also interviewed the deaf and hearing adults involved with each child to ascertain their views about:

- the children’s language use in different situations,
- the levels of complexity of their language use observed in both BSL and English,
- the children’s approaches to English and BSL tasks,
- the children’s language choices and language preferences for different purposes.

All of the interviews were conducted individually by the researcher in the child’s or the adults’ preferred language. An interpreter was not used but the researcher prepared the questions in BSL in advance in consultation with a deaf adult. Each interview was video recorded and then transcribed. Transcriptions were made in the form of a translation into written English as in this case the content of the responses, not the specific language use, was considered to be of primary importance. The complete data gained from these interviews is not reported separately but used where considered relevant to support or illuminate findings from the elicitation activities. Where quotes are taken from the interviews these are not transcribed like the elicitation activities but reported as translations. The full interview questions are presented in Appendix 5.

#### **5.3.4 Triangulation**

Data about the children’s developing sign bilingual skills was collected from a range of different sources (translation activity, comparative analysis activity, interviews) with the expectation that using two or more sources would lead to a more elaborate picture of each child’s experience. It was expected that because three language activities with several tasks

in each were used that patterns in the individual children's behaviour would be allowed to emerge thus providing an in-depth view of individual processes.

The relationship between the research questions, the data required for analysis and the evidence provided by the different elicitation tasks is identified in Figure 7. below.

Research questions	Data needed for analysis	Source of evidence
<b>1. The nature of sign bilingualism</b>		
<ul style="list-style-type: none"> <li>• <b>How do the children move between their two languages ?</b></li> </ul>	<ul style="list-style-type: none"> <li>• evidence of interim stages that the children insert to complete a task which requires them to move from one language to another</li> <li>• evidence of ways in which the two languages are used to discuss the language tasks</li> </ul>	<ul style="list-style-type: none"> <li>• children's practical approaches to comparing two language items and translating from BSL to written English, including discussion with adult, thinking aloud and help requested.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>What can be learnt about deaf children's representation of English?</b></li> </ul>	<ul style="list-style-type: none"> <li>• evidence of strategies that the children use to manipulate written English</li> <li>• evidence of children's perceptions of how English works</li> </ul>	<ul style="list-style-type: none"> <li>• ways in which the children prepare and compose their writing including their use of BSL, their requests for help and the written outcome</li> </ul>
<ul style="list-style-type: none"> <li>• <b>How do the two languages influence each other?</b></li> </ul>	<ul style="list-style-type: none"> <li>• evidence of preferred language influence in approaches to tasks</li> </ul>	<ul style="list-style-type: none"> <li>• ways in which the children use both languages to solve comparison and translation problems</li> <li>• the influence of the BSL source on the children's written translation</li> </ul>
<ul style="list-style-type: none"> <li>• <b>How do the children perceive the differences between the two languages?</b></li> </ul>	<ul style="list-style-type: none"> <li>• evidence of the ability to recognise equivalence of meaning across the two languages and modes</li> <li>• evidence of the ability to identify the differences between the BSL and the written meaning</li> </ul>	<ul style="list-style-type: none"> <li>• children's response to comparison tasks where some languages items structurally very different to each other although conveying the same meaning</li> <li>• children's explanations of the differences between the</li> </ul>

<p><b>2. The nature of metalinguistic ability</b></p> <ul style="list-style-type: none"> <li>• <b>What metalinguistic abilities can be identified?</b></li> <li>• <b>Can metalinguistic abilities support literacy development?</b></li> </ul>	<ul style="list-style-type: none"> <li>• evidence of ability to reflect on and talk about language</li> <li>• evidence of the children's understanding of the separateness of the two languages</li> <li>• evidence of understanding of how the two languages do or do not relate to one another</li> <li>• evidence that the abilities identified support the writing process</li> </ul>	<p>written English and BSL items.</p> <ul style="list-style-type: none"> <li>• ways in which the children express their responses to the comparison problems</li> <li>• attempts the children make to express the meaning of the BSL source message in their written English translation using correct English conventions</li> </ul>
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*Figure 7. Relationship between the research questions and data analysis*

### 5.4 Focus of the analysis

The focus of analysis was the translation activities and the comparative analysis work.

#### 5.4.1 Analysis of the translation tasks

In the translation task from BSL into written English the analysis concentrated on aspects of the process that children went through. The nature of the help that each child requested was also considered to be significant as well as the actual final written product. One aspect of the product analysis focused on the strategies each child used to translate BSL structures

which have no direct equivalence in written English into written English. These will be illustrated in detail in Chapter 6.

In addition to this, analysis of the process was done looking at how each child prepared for the written task. This was undertaken as it became evident that the children had various mediation strategies for writing. Strategies included prior rehearsal in BSL or repetition of the BSL used on the video tape; prior rehearsal in the child's own choice of BSL or prior rehearsal in spoken English.

A contrast was made between the children's text written from the picture source with their text written from the BSL source. An analysis was made of the difference in length; the difference in types of grammar structures and vocabulary used.

#### **5.4.2 Analysis of the comparative analysis tasks**

An analysis of the children's performance on the comparative analysis tasks was made which focused on the processes they went through in terms of their discussion about the task and their on-task behaviour as well as on the final product or their individual responses. The interaction around the task and the children's responses were analysed against the following questions.

- What interim stages do the children insert to complete the task such as re-versioning the BSL targeted sign into familiar BSL or providing a verbal English translation for themselves before searching the text?
- What constitutes a difference between the BSL and the written meaning in their eyes and how do they express their understanding of these differences?
- Do they demonstrate the ability to recognise equivalence of meaning across the two languages and modes?

## **5.5 Developing a transcription technique**

A pre-requisite to data analysis is data collection and this can be a problematic area where the two languages involved (signed and spoken/written) cannot be transcribed using similar techniques. Deuchar (1984) discusses the practical problem of recording data where sign language is one of the languages in use and emphasises the advantages of video recordings. Video recordings were made of the contrastive analysis tasks conducted with the individual children as these activities were heavily interactive. Video recordings of these sessions allowed the researcher to systematically analyse the researcher's and the children's contributions and language use in response to the task.

Where activities were video recorded the video was set up on a tripod and the researcher and participant seated facing the camera. The researcher turned the video on and off and because of its positioning the researcher and participant remained seated throughout the activity. In the pilot activities the video was also used so the researcher was aware of the best camera position, seating and lighting arrangements for the main study. Although video recording can be intrusive, the children were used to this happening and quickly forgot the camera. Video recording also allowed for the consideration of non-verbal features of the children's behaviour and response to the tasks. These recordings are a permanent record of the data which can be analysed from various perspectives, enabling a focus on the processes involved in the tasks in addition to the product. The transcription process consisted of two stages. First a summary was written of the interactions between the researcher and the individual children. For this preliminary stage interaction in BSL or SSE were translated into written English. This allowed the researcher to identify which sequences of interaction

were relevant to the activity and therefore needed more detailed transcription. When these sequences were identified each utterance was analysed in turn and transcribed using the specifically designed code described below. For each utterance the features, that is signs or words, of the dominant language were transcribed, i.e. the language in which the main message was conveyed. Where language mixing took place (as in the majority of utterances) the features, of the language used alongside the dominant language were transcribed below the dominant language so that language mixing and language switching could be distinguished.

During the writing (translation and non-translation) tasks the researcher was involved only to set up the activity and then gave help where requested. This data about the process of translation as observed in the children's approach to the tasks was recorded as field notes by the researcher. Video recording was not used because it was intended that the analysis would focus largely on the written product (apart from notes regarding help requested) rather than any interaction during the writing process.

For the transcription of the data from the comparative analysis (CA) tasks it was essential to be able to represent the children's use of both languages (as a separate and distinct use or as a mix of the two languages) and how their language use changed in response to the tasks and the researcher questions. A transcription technique was therefore developed which illustrated varying dual language use. The object of the analysis of the comparative analysis tasks was the children's approach to the task and the meaning of their responses and so it was therefore considered appropriate to include in the transcription an English gloss of the children and adults' signed input conventionally written in capital letters. The children and the researcher used signs and phrases from the BSL video story through the CA task but



where the children altered a sign given in the story as part of their thinking process this was noted.

The limitations of a gloss are recognised (Deuchar 1984, p. 52) but for the purposes of this research it is useful to be able to capture the essence and the style of the children's utterances and record this in writing. Conventions do exist for transcribing sign language and these were used as far as possible (Klima and Bellugi, 1979). However, an additional system was needed for transcribing the children's use of spoken English in response to the tasks. A procedure for doing this used by Maxwell (1989) was adopted as an appropriate model. The full transcription code adopted for the purposes of this research is set out in Figure 8. below.

**LOOK** - words in capital letters denote an English gloss for a BSL sign. (A gloss represents the meaning of the basic form of the sign taken out of context).

**LOOK-AT-ME** - Words in capital letters connected by a hyphen are used when a single sign requires more than one English word to give a gloss of the meaning.

***W-O-R-D*** - Words in capital italic letters separated by a hyphen denote a finger-spelled word

***W*** - a single capital in italics denotes initialisation (finger-spelling of initial letter of a word, e.g. for people's names)

**spoken** - lowercase text denotes voiced speech

***unvoiced*** - lowercase text in italics denotes the use of voiceless speech or lip patterns

**{WORD** - the use of brackets denotes simultaneous output - the dominant language is

**{ word** always on the top line

**(description)** - lowercase text in brackets is used for the description of actions

text - lowercase text underlined denotes written English

..... - a series of dots indicates a pause

*Figure 8. The transcription code*

Throughout the transcription of the comparative analysis tasks the researcher's language has been recorded in as much detail as the children's although punctuation details which rely on intonation such as question marks and exclamation marks have been omitted as it cannot be assumed that these were fully accessible to the children. Because the children often used signs alongside spoken language it was necessary to show this dual output and the dominant language is defined in this case as the one which the children used most fluently and through which they communicated their main ideas. During the comparative analysis task it was significant that the children sometimes altered the sign identified before they searched for the English and throughout the transcriptions this has been indicated in brackets. Although this transcription scheme is complex it allows the interaction between the two languages during this activity to be illustrated.

## **5.6 Reliability of the research**

The methods of data collection used in this study led to reliable findings about the individual nature of each child's bilingual skills because of the way in which the data was collected and the time scale adopted. Pupils differed in their responses to language activities on different days for a variety of reasons, but because these activities involved the researcher working alongside each pupil on a regular basis over the period of a full academic year it is felt that valid conclusions can be drawn about each individual's learning behaviours. The variety of

data collected also ensured that the fluctuating nature of pupil performance did not distort the overall findings.

Another contributing factor to the reliability of this research was that the researcher was able to control the instructional input to all the pupils by being directly involved with the delivery of the tasks rather than observing the pupils with their individual teachers. This factor ruled out the need to account for differences in delivery of the task or in teacher style. This intimacy between the researcher and the subjects did however raise separate questions about researcher influence on the pupils' performance, the nature of the pupils' responses and the level of objectivity deployed in the analysis of the findings.

One question about the reliability which does arise is the lack of an established transcription and analysis technique for the data collected. Because of this the data analysis is richly descriptive so that interpretations can be evaluated. In addition to this, the data collected has been video recorded and transcribed so that the actual events can be reviewed for the purposes of checking the reliability of the transcribing and analysis.

The researcher is a hearing adult with CACDP level 2 (Council for the Advancement of Communication with Deaf People) sign language skills who is well-known to the children as a teacher. It can be argued that research which involves the interaction of the children's English and sign language skills should be carried out by a deaf researcher or a hearing researcher with native sign language skills and this point needs careful consideration. The goal of this research is to investigate how deaf children deploy their bilingual skills in natural communicative settings in response to specific language activities. Working with a hearing adult will undoubtedly have an effect on the dynamics of the communication and will bring the English aspect of the children's skills to the fore. Although this must be acknowledged

this is not detrimental to the findings in terms of the research goals as long as the children are not disadvantaged in doing the tasks because of the researcher's lack of native sign language skills. Communicating with hearing adults about a language task is a natural everyday occurrence for these children in this setting and the information that is generated is not therefore unique to this research situation but reflects the reality of the linguistic demands made regularly on the children.

The children's BSL skills are not the focus of the analysis, it is their strategies for tackling the language tasks and the written English outcomes of the translation activity which are scrutinised. It is argued therefore that this can be carried out by a hearing researcher as long as their comprehension and interpretation of the children's contributions is accurate. In one sense, the researcher is advantaged by being so closely involved with the data collection procedures because this intimate relationship with the context of the research facilitates the understanding of the children's responses.

The process of video recording and the full transcriptions made of the comparative analysis activities also allows the researcher to ensure that the children's contributions are interpreted correctly by reviewing the interaction on film and consulting a deaf adult where necessary. The analysis of the data by a single person can still be objective where objective is defined in terms of 'what multiple observers would agree to as a phenomenon' (Robson 1993, p. 74).

## **5.7 Research validity**

The methods of data collection were varied to fit and respond to the different aspects of the research questions. The translation activity generated data about the strategies the children

used to move from one language and one mode to another and how these strategies were influenced by their preferred language. These activities also highlighted the strategies that the children use to manipulate written English and the children's metalinguistic skills

The contrastive analysis task generated data which informed our appreciation of the children's understanding of the separateness of the two language and of how the two languages do or do not relate to one another. These activities also provided evidence of the children's individual language learning strategies and their different styles or approaches to language learning and to language use.

The interviews provided additional supportive data about the children's perceptions of their own bilingualism. The reflections of the deaf and hearing adults who were closely involved with their education provided data which supported the researcher's interpretations of the children's actions and language choices.

The way in which the evidence was drawn from the data analysis is detailed and descriptive which enabled the credibility of the research to be properly assessed. Across all the tasks certain patterns emerged in individuals which also demonstrated the validity of the research methods used.

## **5.8 Generalisability (external validity)**

Findings from this research are specific to the group studied within their respective educational settings. They are not generalisable to all sign bilingual children because of the very individual nature of the individual's bilingual skills but they raise significant issues which are relevant for other sign bilingual language learners. Other researchers in this field

have come to similar conclusions about the difficulties of generalising with such variation across individuals, but have stressed the importance of recognising the highly pertinent nature of the findings in relation to similar groups and situations (Maxwell and Doyle 1996; Young 1997).

The rich description provided by this set of case studies does allow parallels to be drawn with other situations as it is possible to identify shared characteristics between the group studied and other sign bilingual children in their educational settings. Therefore, the study is not an isolated examination of 6 individuals but a grounded study of a particular phenomenon where the individuals are the vehicle for exploring possibilities and developing our understanding.

## **5.9 Conclusion**

According to Lincoln and Guba's criteria (1985), this study is fundamentally a naturalistic enquiry in that it is a study of human behaviour and experience carried out in the natural context. It is acknowledged that the theoretical starting point for this study was a 'best fit' framework and that the study moves towards an emerging theory. Because of this, the focus of the data collection is not too heavily specified at the outset as the lack of previous research makes it impossible and inappropriate to control the direction of the study too tightly. Although focus-determined boundaries for the study are clearly marked by the research questions, the need to remain open to unexpected findings is stressed. The importance of flexible and adaptable and therefore qualitative methods of data collected are also recognised. The research design emerged as the study developed and the pilot work played an essential part in this process. Selective sampling was used as it increased the potential for the data to yield relevant information in relation to the research questions. The

data is analysed inductively as this allows for a rich description of the setting and the behaviours of the researcher and subjects. Special measures of reliability and validity are devised which are appropriate to the questions and shape of study. These involve the need for full descriptions as well as transparent transcription and analysis procedures in Chapters 6 - 9.

**5.10 Introduction to the empirical work**

The following four chapters provide a description and analysis of the empirical aspect of the study. Each chapter presents a different practical language activity undertaken with the 6 children who are the subjects of the research. All of the elicitation activities used reflect the typical language demands made on the children in the classroom although they have been specifically designed for the study. In each chapter the different aspects of each activity are analysed separately according to each individual child’s response. The chapters are therefore divided into the tasks, the focus of the analysis and the individual children’s responses. The structure of this part of the study is illustrated in Figure 9 below.

Chapter no.	Elicitation activity	Focus of the analysis
Chapter 6	<b>Written translation activity:</b> Children translating a BSL story into written English	<ul style="list-style-type: none"><li>• the nature of the help requested by each child</li><li>• the strategies each child uses to translate BSL structures which have no direct equivalent in English into written English</li><li>• how each child prepares for the written task (mediation strategies for writing)</li></ul>

<b>Chapter 7</b>	<b>Written (non-translation) activity:</b> Children writing a story based on a given sequence of pictures.	<ul style="list-style-type: none"> <li>• differences with the story written from a BSL source in terms of: <ul style="list-style-type: none"> <li>- length</li> <li>- grammatical structures</li> <li>- range of vocabulary</li> </ul> </li> </ul>
<b>Chapter 8</b>	<b>Comparison activity 1. (BSL -&gt; English)</b> Children comparing a BSL story with a written English version. Phrases are selected from the BSL version and the children look for equivalents in the written English version.	<ul style="list-style-type: none"> <li>• the interim stages the children insert to complete the task such as re-versioning the BSL targeted sign into familiar BSL or providing a verbal English translation for themselves before searching the text</li> </ul>
<b>Chapter 9</b>	<b>Comparison activity 2. (English -&gt; BSL)</b> Children comparing a written English story with a BSL version. Phrases are selected from the written English version and the children look for equivalents in the BSL version.	<ul style="list-style-type: none"> <li>• what constitutes a difference between the BSL and the written English meaning in the children's eyes and how they express their understanding of these differences</li> <li>• the extent to which the children demonstrate the ability to recognise equivalence of meaning across the two languages and modes</li> </ul> <p>(areas of analysis for both comparison activities)</p>

*Figure 9. Structure of the empirical part of the study (Chapters 6 - 9).*



### **TRANSLATION WRITING**

#### **6.1 Introduction**

For this task the children were asked to view a BSL story on video being told by a familiar native sign language user. It was essential to have a BSL story told by a native sign language user so that the children were asked to translate from BSL to written English and not from Sign Supported to written English. Although the BSL story was presented as a personal account by the deaf adult, the length, structure and style of the story reflected that of the picture sequence stories with which the children were familiar. The children were asked to watch the BSL story on video and to write their English version. The tape was reviewed as often as they requested. Any help they requested was given and noted. This work had been previously piloted with the children by their teachers which informed decisions about the appropriate length and content of the BSL source story.

#### **6.2 Focus of analysis**

The analysis concentrated on the process that children went through to complete the translation task as well as the final written products. Analysis of the process focused on how each child prepared for the written task. This was undertaken because it became evident during pilot work that the children had various mediation strategies for writing. Strategies included prior rehearsal in BSL or repetition of the BSL as used in the source story; prior rehearsal in the child's own choice of BSL (paraphrase) or prior rehearsal in spoken English. The nature of the help that each child requested was also considered to be significant in terms of the conclusions drawn about individual children's sign bilingualism.

The other area of analysis focused on the strategies each child used to translate BSL structures which have no direct equivalent in English. That is to say where information was specified in such a way that it could not be directly recoded in written English. It was intended that information would be gained about each child regarding the following points:

- their ability to interpret the meaning of the BSL source language,
- their awareness of the shortcomings of writing down the BSL,
- their understanding of the separate nature of the two languages,
- their ability to work creatively with their repertoire of English skills.

Three specific BSL phrases and the children's attempts at a written translation of these phrases were selected for the purposes of analysis. These three items were selected because each phrase incorporates particular features of BSL which have no direct equivalent in English and therefore interpretation of the BSL phrases is needed for an English meaning equivalent to be constructed. Each phrase is discussed separately and the individual children's written translation attempts described and analysed in turn. The children's full written translations of the BSL story are included in Appendix 4.

### **6.3 Transcripts of the story**

In order to provide a context for the analysis of each child's translation work a gloss of the BSL story is provided below. The video tape of the BSL story used for this translation activity is included in Appendix 3. The sequences selected for analysis are underlined. English punctuation has been added to the gloss to preserve the meaning of the story.

## Gloss of the BSL story

HI! I WANT TELL-STORY SHORT. I HAVE BOY NAME *J-O-S-H*. HE HAVE NEW DOG WHAT NAME *B-I-L-L-Y*.

BEFORE BEEN HIS DADDY'S BIRTHDAY. I THOUGHT...TAP...*S-A-T* BIRTHDAY WHO?...DADDY'S!

*J-O-S-H* EXCITED WHAT DO? THOUGHT WHAT..WHY-NOT MAKE CAKE. JOSH YEAH!

BOTH WENT SHOP. HIS DOG SIT-UP WANT WITH .....HMM...BETTER STAY. BOTH WENT SHOP LOOK-AROUND BUY WHAT? THINK WHAT BUY...CHOCOLATE...YES...MAKE CHOCOLATE CAKE RIGHT. BUY THINGS HOME MAKE CAKE.

LOVELY CAKE SMELL GOOD. WAIT WAIT WAIT DADDY HOME FINISH DADDY HOME. COME SHOW.... GONE CAKE.

DADDY THINK WHERE DOG. JOSH LOOK SAW OH AWFUL! DOG-WALKING-HAPPY CHOCOLATE-ALL-OVER-FACE.

A full written English translation of the story has also been provided. The sections underlined are those which relate to the sections of the BSL story selected for analysis in the children's written translations.

## Written translation of the BSL story

Hi, I want to tell you a short story.

I have a little boy; his name is Josh. He has a new dog. His name is Billy.

A little while ago, it was his daddy's birthday. I thought about it and said to Josh "On Saturday, you know whose birthday it is?"

"It's daddy's!"

Josh was really excited "Oh, what shall we do?"

I suggested "Why not make a cake?"

"Oh yeah!" said Josh.

We were setting off for the shop. The dog wagged his tail hopefully. **He wanted to come with us.** We thought that he had better stay at home.

We got all of the things to make a chocolate cake and then went home and made the cake. It was a lovely cake and smelt wonderful.

**Josh waited for daddy to come home. At last, daddy came home** and we called him to show him the cake. Oh, it had disappeared!

Dad was puzzled. "Where's the dog?" he asked. Josh looked at the dog. Oh no! The dog came tottering happily along with **chocolate cake all over his face!**

## 6.4 Written translation problem 1.

In the BSL story the deaf adult uses a BSL sequence which appears to be made up of two English words but which is a BSL structure in its own right meaning 'he wants to come with us' in this context. The BSL sequence which is delivered can be glossed as WANT WITH. The reason that this is interesting for analysis is that because the lip patterns given relate to familiar English words the children have a cue for some English that they could write although if they simply write the BSL down this will not be correct English. It will be interesting to see to what extent each individual tries to provide a translation and not a transliteration (gloss) of the BSL phrase.

---

### *Nicola*

Nicola wrote billy wants with dad

### *The process*

Nicola rehearses the phrase in BSL as signed on the tape: WANTS WITH.

She then asks for the spelling written down of WANT using the sign from the tape.

She then checks with the researcher how to spell *W-I-T-H* using finger-spelling.

Finally, she writes dad independently.

### *Discussion*

Nicola's approach to this task is to try to write down the actual BSL: WANT WITH but to add her own details such as billy which is correctly placed before with. She adds dad which is written correctly after with. Both of her additions actually add English features to her writing, namely that she puts a subject and an object in the written English phrase which are not specified in the same way in the BSL version.

---

## *Simon*

Simon wrote dog wants To go To Shop.

### *The process*

Simon's general approach to the written task is to rehearse what he plans to write using his voice, which is faint but mainly comprehensible, with some accompanying signs. He then normally writes down what he has rehearsed asking for written spellings. When he is confident of the phrase he is rehearsing he will drop the accompanying signs. For example he rehearses both of the following phrases using only voice and then asks for individual spellings as he writes:

S Josh got a new dog.....what shall we do? (hesitates)

R (prompts) what happened with the dog

S (replies) dog wanted to go to the shop (he then writes this down independently).

(S = Simon, R = researcher)

### *Discussion*

Simon combines his ability to understand and interpret the BSL narrative with his verbal English skills very successfully to produce a written version of the story which is close to the BSL but which has a lot of English features such as word order, use of function words and SVO structures.

---

## *Lucy*

Lucy wrote My little son billy new.

dog want come with in shoP.

### *The process*

Lucy rehearses what she is going to write in BSL first and then picks out the key words she wants to write down. She rehearses: DOG WANTS T-O COME WITH and then asks for the spelling of want and then of come with but writes in shop independently

### *Discussion*

It is not clear whether Lucy intends dog to be the end of the first sentence of her written story or the beginning of the second phrase. If it is intended to be a part of the second phrase then she has correctly inserted the subject of the English sentence. She has also added come and in shop both of which are English features not conveyed in the original BSL of WANT WITH. It seems that although Lucy does not always use spoken English to rehearse her writing she has a model of English which she uses to build on the key words extracted from the BSL and she has some idea of what an English sentence should look or sound like.

---

### *Jake*

Jake wrote Not Dog with got shop

### *The process*

Jake rehearses in BSL: DOG WANTS WITH and then adds NO STAY and then begins to try to write down what he has rehearsed. This is a long and arduous task during which Jake loses his thread several times. Jake rehearses in BSL: WITH DADDY AND JOSH, DOG WANTS WITH NO STAY. He then writes dog. Jake then rehearses in BSL: NOT WITH JOSH and writes not. He rehearses WITH in BSL and then writes with. Having got this far Jake rubs out all of his work to start again.

To move Jake forward the researcher prompts Jake about the story in BSL. Jake's reply is DOG and then he writes dog. He then rehearses GO WITH and writes with. Then he rehearses GO WITH SHOPPING and writes got. Then he writes sohop but corrects it using text written earlier to shop.

### *Discussion*

Jake tries to write down the BSL gloss and struggles with retaining any meaning of what he is writing as well as with the actual mechanics of writing. He clearly comprehends the BSL as he rehearses several different possible phrases in an attempt to plan something to write. The discrepancy between Jake's BSL and English skills is very marked here and he is frustrated by his lack of independence with the written form.

---

### *Hannah*

Hannah wrote BiLLy was HaPPy to buy the Cake.

### *The process*

Hannah does not discuss or rehearse this phrase but simply watches the BSL tape and writes her version independently.

### *Discussion*

Hannah demonstrates here a very useful strategy as a language learner. She aims to actually translate the BSL phrase into an appropriate English phrase and so moves away from the BSL structure and instead of relying on cues from the BSL she uses the English she is confident with to write a 'close-enough' translation. What is interesting about her written phrase is that it is very much in her own words and that she has not tried to go beyond her



own English resources. Her writing does not seem to be influenced by the BSL. She has a picture of what happened and is able to paraphrase this to get the main ideas across.

---

### ***Mark***

Mark did not attempt to translate this BSL phrase in his written version.

## **6.5 Written translation problem 2.**

In the BSL story the deaf adult uses the BSL feature of repetition to indicate that an action was repeated over time or prolonged. In this instance, she uses the sign for WAIT three times to convey the idea that Josh waited for a while for his daddy to come home. She then uses the sign for FINISH which is a perfective marker which indicates that the waiting is over. The gloss of the BSL phrase would be WAIT WAIT WAIT DADDY HOME, FINISH DADDY HOME. A full translation could be Josh waited and waited for daddy to come home and then at last daddy came home. Alternatively, instead of repeating waited in English a different written translation could be Josh waited for a long time for daddy to come home and then at last daddy came home.

The use of the written English phrase at last is an attempt by the researcher to provide an appropriate translation for FINISHED in this context and an appropriate connective between the two clauses. The reason that this is interesting for analysis is that because of the match between the sign WAIT and the familiar English word wait the children have a cue for writing although it would obviously be inappropriate English to write wait three times. How then do they convey the sense of waiting over some period of time which is conveyed by this BSL phrase? In addition to this problem, the children have to decide how to address the translation of the sign FINISH in this context. There are no cues from this

BSL sign for the written English and an appropriate translation relies heavily on an understanding of the context of the whole phrase as well as sufficient competency in English to construct an appropriate translation.

---

### *Nicola*

Nicola wrote wants DaD DaD at last home

### *The process*

Nicola rehearses *J WAIT WAIT WAIT FINISH* in BSL as it is expressed in the BSL story but at the end she adds the sign for **READY**. As she begins to tackle the written version she asks for the English for **FINISH** using the sign from the BSL story and the researcher gives her the written English at last. By doing this the researcher has provided an appropriate English translation but not a gloss of the BSL sign. This is because the researcher, based on her knowledge of the child, assumed that the child already knew the spelling of the English finish and was here asking for help with the correct translation of the sign. The researcher may have over-interpreted the child's request but for the purposes of the analysis it is sufficient to note that Nicola did not attempt to translate **FINISH** herself. She looks back in her own text for the spelling of wait but further back she has mis-copied it and written wanit. In this instance she writes wants, which is a familiar word to her, in the place of wait.

### *Discussion*

Assuming that Nicola's writing of want is due to mis-copying it is reasonable to comment on her attempt to correctly place the verb before the object (even though wait does not have a direct object in English) and indeed her addition of dad which is not specified in the BSL. She has also only written want (wait) once and not tried to transliterate the BSL version by

repeating it to express a lengthy or prolonged wait. She demonstrates further her awareness of English structure by writing DaD at the beginning of the next unit of meaning. Because she asks for help with translating the sign FINISH it might be concluded that she knows that to write finish would be inappropriate but has no alternative ideas. Nicola demonstrates her English awareness on several occasions and also seems to know when she is thwarted by the differences between the two languages by asking for help instead of writing English which would be meaningless in that context.

---

### *Simon*

Simon wrote go home wait. DaDDy come home.

### *The process*

Simon rehearses the above writing in spoken English and then asks for the written spellings he needs. Because he is comfortable working in this way it is possible to prompt him using the spoken form. The researcher prompts Simon in this instance asking him what happens when they get home and he replies using voice 'wait daddy coming'. He then asks for the spelling of come but writes the rest of the phrase independently.

### *Discussion*

Simon is able to interpret the full meaning of the BSL version and formulate his own appropriate written English translation. He is undoubtedly advantaged in doing this by his ability to think aloud verbally before putting pencil to paper. His confidence with the English is highlighted by the fact that he does not attempt to repeat wait in a transliteration of the BSL and he does not attempt to find an equivalent for FINISH but marks the sequence by using a full stop between the two clauses.

---

## *Lucy*

Lucy wrote wait for DaDDy at last home

### *The process*

Lucy rehearses WAIT WAIT WAIT as it is expressed in the BSL version of the story. She then asks for the spelling of wait. She then rehearses for using voice before she writes it independently and then rehearses FINISH as produced in the BSL version and uses exactly the same sign to ask the researcher for the written version. The researcher gives at last for the same reason outlined in an earlier analysis.

### *Discussion*

Lucy is able to use her English skills to correctly translate WAIT WAIT WAIT and use the English verb appropriately with for. She finds herself out of depth however with FINISH and makes no attempt to find an English equivalent for this.

---

## *Jake*

Jake wrote wait Daddy

### *The process*

Jake rehearses his ideas in BSL before writing. In this instance he rehearses WAIT DADDY using signs only but he does not repeat WAIT as signed in the BSL version. He also adds DADDY indicating what Josh is waiting for. Jake then writes W to start off his English text and then asks for the spelling of wait and then writes Daddy independently.

## *Discussion*

The fact that Jake rehearses the phrase not repeating WAIT as is done in the BSL leads us to speculate that he is aware of the difference between the two languages and of some of the rules governing written English. What is certain is his confidence and ability to interpret the BSL as he is able to take the central meaning out of this and either paraphrase it in his rehearsal or attempt to prepare an English version.

---

## ***Hannah***

Hannah wrote Josh was waiting for DaDDy back

DaDDy was back

## *The process*

Hannah rehearses out loud in spoken English 'Josh was waiting for daddy to come back' before she writes. She then asks for help with the spellings of waiting, back and was.

## *Discussion*

Hannah is able to put together a complete translation of the BSL into written English using the spoken form to plan and rehearse her text. She goes beyond a literal translation or gloss of the BSL signs and adds both the subject and the object as well as tense and function words. Her advantage is clearly her spoken language skills as she is able to write down most of what she has planned out loud.

---

## ***Mark***

Mark wrote wait for DaD arrive home

Him arrive home now

### *The process*

Mark does not rehearse his written text out loud or using individual signs. He works silently asking for spellings where he needs them. In this instance he asks for the spellings of wait, for, arrive, home, him, now.

### *Discussion*

Mark also succeeds in constructing a full and complete translation of the BSL using two separate clauses to communicate the two separate ideas. These are firstly that Josh is waiting and then that daddy eventually arrives. In the same way as Hannah has done, Mark has created the linear time scale needed in the English and added all the details necessary for a reader to understand the two phrases without necessarily knowing the entire context. Mark is clearly able to interpret the BSL and creatively construct the written English. Unlike Hannah he does not use out loud speech to plan his text although we might speculate about his silent verbal thinking.

## **6.6 Written translation problem 3.**

In the BSL story the deaf adult uses a BSL phrase which visually describes that the dog has chocolate cake all round his mouth and indeed all over his face. To illustrate this the deaf adult represents the dog in her story-telling and drags her fingers down her cheeks and round the corners of her mouth whilst also wearing a glazed but contented facial expression. This type of characterisation is a common device in BSL although this description could be described as non-linguistic which presents the children with a complex translation problem. The meaning of the BSL phrase in this context is unmistakable as the description is so vivid but because the whole meaning is expressed through one sign the children will have to use their own English resources to create a written English equivalent. Because no separate

signs are used, writing a gloss of this BSL phrase is not a straightforward task. The children in this instance are therefore left in no doubt as to the meaning of the BSL but with the task of creating their own English equivalent of this colourful scene.

---

### *Nicola*

Nicola wrote dog cake all over his face

#### *The process*

Nicola manages to construct the build up to this part of the story in her written English independently as she writes:

John Look dog cake eat

John Look dog

However, when she comes to the very last phrase she does not attempt an English version independently, instead she asks the researcher for help with the written translation of ALL-OVER -FACE by copying the BSL exactly as seen on the tape.

#### *Discussion*

There are two main factors likely to be influencing Nicola's choice to ask for help with the whole translation. Firstly, it is very difficult to take the BSL apart as so much information is given in one sign. Ironically, you would need to know the English in order to know what English to ask for as in this case it is not possible even to attempt to write down the English gloss of the signs from the BSL. The second factor is that the researcher is there and help is available as it has been all the way through the tasks and so to flounder and possibly fail is unnecessary. Help was given throughout these tasks because the data collection took place in a natural setting, without this support the individuals may not have been able to engage in the tasks to the extent that they did. What we can deduce however is that this is Nicola's

limit. The nature of this part of the task is difficult enough for her not to even attempt the English herself.

---

### *Simon*

Simon wrote dog got. cake all over. dog Happy

### *The process*

Simon rehearses his own verbal English translation of ‘doggy got cake all over’ before writing this down. He then reviews the BSL version and says ‘happy, dog is happy’ and then writes dog Happy.

### *Discussion*

As we have noted before, Simon's verbal English skills give him some advantage in coping with the more complex BSL structures as he is able to think the meaning through out loud which automatically gives him some English to work from. He does not make many modifications to these initial verbal thoughts, in fact, in this example his writing is more telegraphic than his spoken rehearsal.

---

### *Lucy*

Lucy wrote dog chocolate all over his mouth

### *The process*

Lucy rehearses what she wants to say by repeating the BSL phrase exactly as in the story. She then asks for help in written English using the signs from the BSL.



## *Discussion*

Lucy, as Nicola, is clear about her own limits with the English and does not attempt to construct a translation of the phrase. Based on the work collected from Lucy it seems probable that she has the English skills to make an attempt at this as she has a wide vocabulary and some confidence with English structure, she has also demonstrated in the task that she is able to paraphrase BSL information and put it into her own writing. It may be that beginning to unpack this BSL phrase is the daunting moment rather than finding the English words needed. The BSL phrase is so compact that analysing and unpacking it is too difficult and so unless the children are confident to analyse the meaning first and then consider the possible English they are put off from even beginning this task.

---

## *Jake*

Jake wrote cholate all over his face

## *The process*

Jake rehearses by repeating the BSL exactly as viewed on the video and then he asks for the English for CHOCOLATE. Having copied this down he then asks for ALL OVER FACE by repeating the BSL version and he copies the English given.

## *Discussion*

It is arguable that Jake makes some attempt to re-construct the meaning in English because he starts his written version off with chocolate, whereas in the BSL chocolate is not specified. Alternatively we could interpret Jake's beginning differently. It may be that he is thinking through the meaning of the BSL and interpreting the BSL phrase and so to clarify the BSL meaning for himself he adds CHOCOLATE. The latter suggestion seems more likely given his lack of confidence with English.

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## **Hannah**

Hannah wrote BiLLy got a chocolate round Billy mouh

### *The process*

Hannah thinks through the English translation out loud before tackling the writing. She says 'daddy saw Billy's mouth was all over chocolate'. She then writes got and then a chocolate. Next she rehearses 'round Billy's mouth' and writes this down asking for help with the spelling of mouth.

### *Discussion*

Interestingly Hannah does not write down exactly what she rehearses aloud but puts together a modified or paraphrased version for the English text. She interprets the BSL and then constructs the English but is not restricted by her initial verbal translation of the BSL.

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## **Mark**

Mark wrote Dog has chocolate on his mouth

### *The process*

Mark does not rehearse his ideas either in BSL or spoken English. He works independently asking for spellings of individual words. On this occasion he asks for the spellings of has, chocolate and mouth and he checks his spelling of on which initially is reversed.

### *Discussion*

Mark is able to go one step further than Hannah by doing his preparations silently. His English translation lacks the emphasis of the BSL but he has used his English resources to write down the facts and perhaps this is his limit. To add humour or emphasis to his

translation which is so integral to the BSL would involve more creative use of his English skills. As it is, his interpretation is minimal but accurate.

## **6.7 Conclusions**

### **6.7.1 Specific issues related to the individuals and each translation problem**

In response to the translation problem of WANT WITH the English gloss of this was more often than not used as a cue to help the children make a start on the written English even though several of the children also then added their own English features (Nicola, Lucy and Jake). The nature of this BSL phrase does lend itself to being transliterated as a starting point and this is certainly the strategy which the children without spoken language skills favoured. In contrast Simon and Hannah, who used spoken English as a strategy to prepare their written texts, seemed to do the actual translating part of the task before they began on the written English. Their spoken preparations were already structurally very different from the BSL phrase.

The complexity of the translation task increased with the BSL sequence WAIT WAIT WAIT DADDY HOME , FINISH DADDY HOME because of the repetition used in the BSL and because of the use of the sign FINISH in this context. The children did however take up the cue of WAIT and as with the first task, they then added certain English features such as dad and for. Jake actually modified the BSL in his preparation before attempting the writing in that he took out the repetition. This seemed to be a very useful strategy but because of his lack of written English skills he was not able to capitalise on this. Several of the children also asked for help with the complete translation of FINISH but not the children with stronger spoken English skills. These children did not overtly search for a translation of this but conveyed it nevertheless in the way they structured their English text.

These children's confidence with the spoken form seems to enable them to move away from the BSL structure and allow them to prepare their English translation with the actual meaning and not the BSL structure in their minds.

The BSL phrase CHOCOLATE ALL-OVER-MOUTH presented an even more complex task because the potential sign/word equivalents are reduced to an absolute minimum.

Mouth is really the only English gloss you might pick out if you were trying to write a word for sign transliteration of this. The children with weaker spoken English skills all asked for help with a direct translation. Out of the other three children two of them (Hannah and Simon) wrote a translation very much in their own words which conveyed the meaning and the tone of the BSL phrase whereas Mark wrote a very much more correct and literal translation. Mark never used his voice to plan any of his written work whereas Hannah and Simon favoured this approach, perhaps it is for this reason that they managed to incorporate the emphasis of the BSL.

### **6.7.2 General issues**

From this section of the analysis we can draw some initial conclusions about the children's level of awareness of the two languages, their strategies for moving from BSL to written English and their emerging model of English.

All of the children seemed to be aware of the limitations of simply trying to write down the English gloss of the BSL although the children with the least choices regarding their use of written English used this strategy as a starting point. Even though many of the children did this where they could, their awareness of the differences between the two languages was still evident because of their attempts to add other English features to their text such as the subject or object in a sentence.

It seems that this translation task was a different activity for these two groups of children because they started from very different places. For the deaf children without strong spoken language skills the actual writing was really the first stage of the translation process whereas for the children with more oral skills the writing down of the English was the end of this process. For the children who used spoken English to support their translation work this additional step in the translation process seemed to provide a mid-point for them where they could test out various English possibilities. For the other children a mid-point in the process needed to be built in and it may be that this should involve a discussion of meaning and translation possibilities in BSL to help with concept building before the writing process starts.

We can only speculate about their emerging model of English but based on the evidence so far we could conclude that the children with limited spoken language skills accept that certain content words are transferable from BSL to written English but that English requires additional details and linguistic features such as the naming of people and places and the addition of function words. The children with more developed spoken language skills have a very different model of written English which seems to be based on what they hear.

This type of translation task highlights the some very specific issues for sign bilingual children's experience of language learning. The fact that the deaf children's writing is influenced by their BSL is not surprising as it is common for second language learners to transfer words and structures from their first language to their second language and translation tasks can actually exacerbate this tendency. What is different for these children is that they have to make a shift from the visual (live) mode to the written (static) mode. This requires an appreciation of the different conventions and characteristics of each modality,

particularly regarding the way in which different meanings are specified in both languages. A sign bilingual child has to incorporate a third modality into their linguistic repertoire, many of the features of which have no equivalent in spoken or written languages. While we might accept that deaf children make similar errors in their written English to other learners of English as a second language we need to consider whether or not the writing processes that they go through are similar.

The analysis of the different strategies the individual children used provides some useful pointers for the development of teaching approaches. For the children whose preferred language is BSL the bridge between sign language and English needs to build upon the metalinguistic skills that they already demonstrate such as the ability to analyse and paraphrase the BSL source material. The development of these analytical skills in BSL will support their ability to analyse and modify their attempts at the written English translation. The children naturally chose to write a gloss of the BSL as part of their translation process. If this is a meaningful starting point for them they need to develop skills to build up the written English using their knowledge of its structure and rules. This implies explicit teaching of English grammar and structures. A stage which could be added to this process for these children would involve showing them the BSL source story and then asking them to choose the most accurate written English translation from several versions so that they have to use their skills of reading, analysis of meaning and comparing the languages without being under pressure to produce written text as well.

The findings from this analysis reveal a range of strategies for moving between the two languages that the children use intuitively, without prior training. In addition to this the children's emerging metalinguistic skills and some of their perceptions of the two languages are exposed. Both of these factors support the development of the use of translation work

as a language teaching tool as well as a research technique. This aspect of the study also demonstrates the potential of the translation task for providing an insight into the interaction between the two languages and the language learning process. Future work into this area needs to be undertaken which explores the impact of explicit training in metalinguistic skills through translation work on sign bilingual children's language proficiency.

### NON-TRANSLATION WRITING

#### 7.1 Introduction

This elicitation activity required the children to write an English story about a sequence of pictures. This task was included in order to provide a comparison of each child's written translation from the BSL story with their written text produced from a picture. It is accepted that the translation activity was not a straightforward writing task as the BSL source may have influenced the children's writing and therefore general conclusions cannot be drawn about their writing strategies, only about their translating strategies. Because of the information gained about their translation approaches (notably the evidence of the interim stages) it was considered to be important to see if the children deployed similar processes when the translation dynamic was removed.

To provide a comparison text the children were asked to write a story from a short picture sequence. This activity took place two months after the translation activity. The assumption made was that this was a 'language free' stimulus and that there would be some significant differences between the children's two written stories because of the different stimuli.

Whether or not this assumption is a valid one is considered following the analysis of the individual results. Certainly it can be argued that the picture story might allow the children to make their own interpretations and language choices to a greater extent than the BSL story. It might therefore be assumed that the picture-source will result in more confident and complex writing from the children as they can choose to use the best of their English repertoire. How these two different sources influenced the children's writing was therefore be considered in the analysis of the children's texts.



## 7.2 Focus of analysis

A comparison between the two texts was made to examine to what extent the children's translation text was influenced by the BSL stimulus, where they have benefited from the BSL stimulus as compared to a picture-sequence stimulus and where they may have been disadvantaged. The areas considered included difference in word length and difference in types of grammatical structures and range of vocabulary used.

It was not possible to exactly match the two stimuli because of the different modes in which they were presented (BSL and pictures), however a match was made in terms of story genre, structure and length. The Oxford Reading Tree (ORT) scheme was used as a basis for both writing activities. The BSL story was constructed using the ORT characters and reflected the typical story structure of the scheme's text-free picture books. The picture story used for the comparison writing activity was one of the actual ORT text-free picture stories. The actual vocabulary and grammatical demands of each stimulus differed even though the ORT picture books were used as a stimulus for both activities because the stories are conceptualised for English writing and not for BSL. The two tasks did nevertheless require the children to approach writing from two different starting points and the results are considered to be raise valid observations.

The children were allowed to asked for help with the vocabulary in both writing activities since asking them to do unsupported writing was not a normal classroom procedure. The help that the children requested is therefore considered in the analysis in relation to their final written outcome.

For the purposes of the analysis each child's two contrasting texts are presented in the body of this chapter, written exactly as written by the children including line breaks, spelling, punctuation and use of capitals and lower case letters. Beneath the two contrasting texts for each child is the individual analysis and discussion. At the end of the chapter the differences between the individuals are discussed and general conclusions drawn. The video of the BSL story used for the translation text and the picture sequence used for the comparison text are included in Appendices 2 and 3 respectively.

### 7.3 Hannah - contrasting texts

*Text written from BSL story*

" Josh and BiLLy"

Josh got a new dog its NaMe BiLLy.  
Josh got a idea for DADDY BirtHday Cake.  
BiLLy was HaPPy to buy the Cake.  
Josh was waiting for DADDy back  
DADDy was back Josh said COME here  
there you are it disappear DADDy saw BiLLy  
got a chocolate round Billy mouh.

*Text written from picture sequence*

The big box

Chip and Biff Look at the box.  
Biff got a idea. Biff Paint the box.  
and mum cut the box.  
Chip was Happy Kipper can't see.  
Floppy was Happy too. then mum  
came then mum was shocked  
about the box. Kipper was Happy  
Biff was Happy Chip was Happy  
again.

### 7.3.1 Hannah - analysis

Both texts are approximately the same length. There is a marked difference between the grammatical structures Hannah uses in her BSL translation text and her picture-based text. The structures that she uses in the picture-based text are usually short, simple main clauses. Some examples of these are mum cut the box , Chip was happy and Biff paint the box . These clauses are usually conjoined by and or then. By contrast, the structures Hannah uses in her translation text are much more complex in that there are some attempts at subordination such as Billy was happy to buy the cake and Josh was waiting for daddy back and some more complex noun phrases such as daddy birthday cake, a new dog and its name.

The picture-based text is a much 'safer' piece of writing from Hannah where she sticks to structures that she knows and uses a lot of repetition especially in the last 3 lines. She seems to be much more in control of the picture-based text whereas the complexities of her translation text are driven by the complexities of the original BSL story. The differences therefore are a result of Hannah striving to communicate the ideas expressed in the BSL in her own writing.

In the comparison text Hannah uses the bare minimum of new or unfamiliar vocabulary such as paint and shocked whereas in the translation she is forced to extend her use of new written language. Although the vocabulary Hannah uses for the translation text is generally vocabulary within her English repertoire she incorporates what she knows into more sophisticated structures such as happy to buy , was waiting for , and chocolate round Billy mouth.

**7.3.2 Hannah - discussion**

Although there are twice as many errors in the translation text, overall it introduces many more new ideas and avoids repetition. The comparison text is far more stilted with a lot of repetitive structures. The comparison text is a list of events in the correct order where only one thing happens at a time. This difference reflects the difference between the source materials.

The BSL stimulus seems to have a significant effect on Hannah's writing. It influences her use of structures and vocabulary because she is highly motivated to express the equivalent meanings in her writing even though at times they exceed her English grammatical knowledge. Her errors are not a result of her trying to write down BSL, they are errors made as she attempts to use unfamiliar and complex written English structures. Hannah's strong sense of English enables her to respond to the demands of the translation task and to avoid the influence of the BSL in her writing.

**7.4 Jake - contrasting texts**

*Text written from BSL story*

I Josh DaDD saiD  
Birthday Josh excitieD  
Saturday thought  
cak shop with Daddy  
Not Dog with got  
shop Daddy Josh  
make caks make Josh caks  
wait Daddy cak  
dissapeared thought  
Dog chocolate eat  
Dog Josh saw Dog  
cholate all over his face

The big box (title on cover of book)

box big make house

paint house rain

melt make tnet

#### **7.4.1 Jake - analysis**

Jake's translation text has 42 words and his picture-based text only 13 words. Jake uses BSL structures in both texts but in the translation text he attempts to use more complex structures than in the picture-based text. In the picture-based text the sequences he uses are simple clauses without a subject such as make house , paint house and rain melt. The structures he uses in the translation text are generally longer and do not observe standard English syntax: I josh dad said birthday , not dog with, thought dog chocolate eat . This may reflect his attempt to write down the BSL directly rather than paraphrase it into a BSL form that he finds more manageable to translate.

In the picture-based text Jake only uses 9 different words altogether and three verbs ( make, paint, rain ) whereas in the translation text he is forced to ask for translations of more complex words and verb forms such as excited, thought, and disappeared.

#### **7.4.2 Jake - discussion**

Jake's picture-based text, although it is written using BSL structures, is a clear and very succinct paraphrase of the picture story. There are no redundancies in this text in that every word is an essential meaning-carrying word. By contrast, in the translation text there is a lot of repetition and the story at times becomes completely lost. Jake concentrates on the bare essentials in the picture-based text. He records the main events not even bothering with the characters names. His translation text is cluttered with names and he seems to fall over the

labelling of people rather than manage to communicate the events clearly. This is perhaps because he is struggling with the demand of comprehending and communicating the BSL story and names provide a marker in what otherwise could become a string of ideas.

The way in which Jake tackles the two writing tasks is the same in that he attempts to write down the gloss for the BSL. The difference between his two texts is a result of the two different BSL stimuli, one being the detailed BSL story told by a deaf adult and the other being his own interpretation of the picture story. Jake tries to write down the gloss for the deaf adult's BSL in the translation text and, by contrast, transliterates his own BSL ideas in the picture-based text. He is disadvantaged by the BSL stimulus because he is not in control of it and is unable to paraphrase it. There is no evidence to suggest that his attempts at English are more successful in his picture-based text. It is more likely that the clarity of this text can be explained by the fact that he is working within his own language boundaries and not being driven by a more complex source.

### **7.5 Mark - contrasting texts**

*Text written from BSL story*

Josh have New Dog.  
Josh said what we will do.  
Mum have idea. we will go to  
The Shop. What we will  
buy. MuM idea buy some  
chocolate. to make  
cake. I finished the cake.  
wait for DaD arrive home  
Him arrive home now  
Come here oh no said  
Mum. Mum said Josh where  
Dog. Josh found Dog. Dog  
has chocolate on his  
mouth.

One day They have New freezer.  
They have Big Box. What we will do with Box.  
Cihp get idea. we will Make house  
Biff will painted said Cihp. The rain was  
started oh no said Biff. The house  
fell over away then Mum said ho no the  
house is soft. Mum and Dad got idea  
tent. was good said Kipper

### **7.5.1 Mark - analysis**

The two texts are approximately the same length, the comparison text is only longer by a few words. It is interesting to note that the length of each line differs markedly in each story even though the size and dimensions of the paper used were the same.

The translation text contains some English features such as the use of the verb say to introduce direct speech and subject/verb/object structures which makes it difficult to distinguish between the two texts. However, there is a similarity to other children's texts in that the picture sequence text uses mainly simple clause structures (i.e., main clauses combined) whereas in the translation text there are some attempts at subordination as in mum idea buy some chocolate to make cake. Grammatical errors which are made in the written translation are also made in the picture sequence text such as the omission of the indefinite articles a /an and the confusion of tenses. There is no concrete evidence in Mark's work of the BSL story interfering with his written translation or of the picture stimulus resulting in more correct written English.

In both of Mark's texts the use of new or unfamiliar vocabulary is kept to a minimum. He only uses new vocabulary where it is essential for the re-telling of the story and he adheres consistently to the source story-line in both cases.

### **7.5.2 Mark - discussion**

It is difficult to identify significant differences between the texts because of the way in which English structures are used and because they both have a logical sequence. There are some examples where an idiomatic English expression is found in the picture-based text such as one day, and oh no and there are no equivalent expressions present in the translation text. These phrases are likely to be a result of the influence of the text that normally accompanies these characters in the reading scheme text. Mark is able to draw on these familiar expressions in the same way that he uses the characters' names confidently whereas in his written translation he delves into his own English resources because the context of the BSL story does not relate to this reading scheme.

From this analysis it seems that there is very little difference between Mark's translation text and his picture-based text. He uses similar strategies to express meaning in both texts and where there is more idiomatic English in the picture-based text this is likely to be influenced by the pictures used and not a result of being free from an initial BSL version of the story. Mark appears to be not to be hampered by the BSL source story and indeed there is evidence that the BSL source has elicited more complex English structures than the picture sequence source. Overall, his approach to both tasks seems to be very similar. He strives to produce correct English structures and he is not deterred by the BSL presentation of the story. This may be an indication of his strong sense of English and of his ability to think in English when he writes.



## 7.6 Lucy - contrasting texts

*Text written from BSL story*

Hi My little son billy new.  
dog want come with in shoP.  
better leave house went to shoP look  
around idea make chocolate cake.  
Chocolate cake leave smell nice  
wait for DaDDy at last home  
cake gone where dog chocolate  
all over his mouth.

*Text written from picture sequence*

biff and Chip Put up the a  
box mummy Help too  
biff Paint the a roof  
mummy cuts the door  
biff and chip and Kipper in  
the house  
the house is melting  
because is raining  
now is got a new  
tent

### 7.6.1 Lucy - analysis

Both texts are approximately the same length. There is a marked difference between the two texts in Lucy's use of grammatical structures. In the translation text Lucy uses several structures which appear to be the result of writing down the gloss of the BSL such as want come with, better leave house, daddy at last home, and cake gone. In the picture-based text Lucy uses short and more correct subject/verb/object structures such as Biff paint the a roof, mummy cuts the door, and Chip and Kipper in the house. It is interesting that there is an attempt at subordination in the picture-based text as in the house is melting because is

raining whereas other children have tended not to use this in their picture-based writing. Most of the sentences in the picture-based text have a subject (except for now is a got a new tent) whereas in the translation text often the main idea is baldly expressed but there are far fewer names or subject pronouns used. In the translation text Lucy omits definite and indefinite articles whereas in the picture-based text she frequently uses both a definite and indefinite article as in Biff and Chip put up the a house and Biff paint the a roof. This suggests that she is either not sure which is needed or does not recognise the difference between them.

Lucy is not constrained by the vocabulary needed for either text. She asks for the spelling of the words she needs and in the picture-based text she then puts the new word in the correct place in the sentence. In the translation text she sometimes asks for help with the written translation of whole phrases such as look around, at last , and all over his mouth, whereas in the picture-based text she only asks for help with single words. Because she asks for help with these BSL phrases she is then using complex written English which she does not know how to place correctly within the rest of the text.

### **7.6.2 Lucy - discussion**

Lucy remains 'inside' the BSL story as she tries to translate it but she describes the characters and events from 'outside' the picture-based story. In the picture-based story Lucy frequently uses characters' names and it is entirely clear who is doing what. In her translation text she becomes part of the story herself straight away by writing my little son billy exactly as the deaf adult signs in the BSL version. Throughout the rest of the translation text it is not clear who is going to the shop, who is making the cake or waiting for daddy. This reflects the way in which the BSL story is told as the subject is rarely named but indicated through role shift and placement. The translation text also wanders from idea

to idea with no clear starts and finishes whereas the picture-based text has a much more controlled and linear style with complete subject/verb/object clauses.

The use of English grammar conventions and the style of Lucy's translation text seem to be markedly influenced by the BSL version of the story. This text is BSL written down in so far as this is possible. The text lacks written English structure because of this but, nonetheless, all of the key ideas in the story are there. The translation text does flow and it is much more lively than the picture-based text. This suggests that the BSL version of the story does interfere in some way with Lucy's ability to draw on her English grammatical knowledge which she demonstrates in the picture-based text. Lucy has not re-thought the BSL story in English before attempting to write it down. This may be because she is over-enthusiastic to communicate the ideas in the story. This effect on Lucy could indicate that her stronger language is BSL as she is unable to impose her knowledge of English on the BSL stimulus.

### 7.7 Nicola - contrasting texts

*Text written from BSL story*

John have new dog name billy  
dad birthday wundered idea  
have cake billy wants  
with dad Dad said no Dad  
said you stay yes wait  
there please go shop  
look around chocolate cake  
Make Chocolate cake  
John chocolate cake  
in oven John want at last  
ready oven look beautiful  
chocolate cake  
Like the chocolate cake  
wants Dad Dad at last

home come here Dad  
Shom chocolate cake  
nothing cake Look  
dog look dog eat the  
chocolate cake  
John Look dog cake eat  
John Look dog cake  
all over his face

*Text written from picture sequence*

Biff and Chip and Floppy Biff's mum  
Biff made Paint for house Biff  
Like Paint colour Biff wanted  
colour is blue Biff's mum  
made door mum cut door  
Floppy Happy then Floppy  
saw rain Biff saw rain  
Biff closed Floppy no  
no I want in your house  
yes Please Biff alright  
Biff open come Floppy  
Floppy ran in 's house  
Biff now closed Chip window  
closed Kipper closed window  
start to Rain Biff oh  
oh oh oh then said now  
Rain mum Ran come mum  
oh oh oh Dad idea made  
tent Biff yes

### 7.7.1 Nicola - analysis

Both texts are approximately the same length. In the picture-based text there are a series of main clauses, each with a specified subject (frequently a name) as in mum cut door, Floppy saw rain and Kipper closed window. By contrast, in the translation text the subject is omitted or only a single subject is specified for connective clauses as in Josh excited show chocolate cake nothing cake look and dad at last home come here. In both texts Nicola uses

direct speech which is often integrated into the flow of the text without an indication of the speaker.

Nicola does not extend her use of new or unfamiliar vocabulary in either text. She generally makes use of vocabulary within her repertoire and frequently repeats key items. This results in both cases in an overall impression that the texts constantly re-visit the same words although the grammatical sequences change.

### 7.7.2 Nicola - discussion

One impressionistic difference between the two texts is the structure of the picture-based text which is created by the frequent use of character's names. The picture-based text is no less animated than the translation text and the characters are brought to life in both versions because of the English expressions they use such as wait there please and come here dad (translation text) and alright , oh no, and yes please (picture-based text).

Because Nicola has tried to recreate the BSL style of the story her written English translation lacks the grammatical correctness that she demonstrates in her picture-based text. She is equally adventurous in both written tasks and so the BSL stimulus does not seem to provide her with any of the additional inspiration and ideas which enhanced some of the other children's writing. Working from a BSL stimulus may however help Nicola to move forward with her written English style away from the repeated structures she uses in her picture-based text. She appears to be ready to develop a more sophisticated writing style and working on written translations in this way could prove to be a useful starting point for this goal.

## 7.8 Simon - contrasting texts

*Text written from BSL story*

Short story I had boy called.  
Josh got a new dog called.  
Bill before DaDDy Birthday.  
They Saturday DaDDy birthday.  
Josh excited  
What shall we do.  
make cake  
go to shop.  
dog wants To go To shop.  
What shall we buy  
make chocolate cake  
buy cake all.  
go home wait. DaDDy come home.  
DaDDy said where the cake.  
boy saw dog ah! dog got.  
cake all over.  
dog Happy.

*Text written from picture sequence*

Mum went outside then Chip and Biff help  
the man was helping each other then  
Biff and Chip Painted the house  
then mum got a knife to cut the box  
then Biff and Chip and Kipper  
Floppy in the house then mum got  
out for rain and Biff Chip and Kipper  
Floppy Biff and DaD mum Kipper  
and Chip Floppy for sunshine.

### 7.8.1 Simon - analysis

Both texts are approximately the same length. In Simon's picture-based text he writes, for the most part, using simple clause structures i.e., a series of main clauses with a subject (always a name) followed by a verb and direct object, adverb or prepositional phrase (in the

house). In this text Simon also makes one attempt at subordination in then mum got a knife to cut the box. In the translation text the subject is omitted from some clauses such as make cake, go to shop, and go home wait.

### 7.8.2 Simon - discussion

Although the translation text has fewer features of written English structure some far more varied structures are attempted such as the use of direct speech and of questions within the text. The translation text is action-packed whereas the picture-based text becomes repetitive because of the frequent use of then to conjoin clauses and the repetition of characters' names.

The differences between Simon's two texts does reflect the difference between the two stimuli given. The translation text reflects BSL story style where the storyteller represents the characters or indicates subject through role shift. Simon has attempted to recreate this style in his written translation and this seems to have made it more difficult for him to use correct English grammar which he demonstrates in the picture-based text. It seems that in the writing of the translation text Simon is not sure whether he is 'outside' of the story talking about Josh, the dog, mum and dad or 'inside' the story as the narrator. He has tried to write in the style that the BSL story is told, where the storyteller represents the characters at times, and he has not been able to monitor the correctness or comprehensibility of this when transliterated into written English.

When left to his own English resources to write the picture-based text, Simon relies on English structures and writing strategies that he knows, such as the repetitive use of then and the characters' names. When he struggles to find the words for his ideas he just writes words that he knows and this makes the last 4 lines of the picture-based text almost

meaningless. In the translation text Simon does not repeat himself in this way but takes whatever cues he can from the BSL story and writes an English gloss when in difficulty. Simon seems less preoccupied with correctness in the translation text but highly motivated to convey the meaning of the story.

## **7.9 Conclusion**

Each child has been considered separately and their individual responses to these two tasks discussed but there are some general issues which emerge from this analysis. The overall intention of this research is to find out more about the nature of deaf children's sign bilingualism. This contrasting of texts certainly provides further insight into each individual's different experience of this.

The picture-based story texts have not been analysed in full but three areas have been focused on in an attempt to draw out similarities and differences with the translation text. The main questions being asked are whether or not the children's writing is markedly different when the BSL source is removed. To what extent does BSL still have a role in the writing process for the children when they are asked to write from a picture stimulus? It is proposed that the outcomes from this second strand of the empirical work will further contribute to the findings from the other tasks about the children's strategies for moving between both languages and how these relate to their strengths and weaknesses in either language.

### **7.9.1 The influence of spoken English on the writing process and outcomes**

The children who demonstrate some ability to mentally prepare their writing, perhaps using their spoken language skills, are able to hold onto their sense of English and deploy that



strategy in the translation situation. As a result these children's texts did not differ significantly (Mark and Hannah). For these children English is probably their stronger language. The way in which they are affected by the BSL stimulus is more a matter of motivation to convey the sense of the story and a reflection of the fact that they have not set their own language boundaries, as they can do in the picture-based text. It should also be noted that the BSL source forced the children to ask for more help which may have resulted in a more complex written product from some. For these children, a carefully constructed translation task with adult feedback could clearly be a positive learning experience.

### **7.9.2 The influence of BSL on the writing process and outcomes**

At the other end of the spectrum is Jake who, for very different reasons, is neither advantaged or disadvantaged by the BSL stimulus because for both tasks he adopts the same approach which is to write down BSL as far as he can. The difference between the two texts written by Jake are a reflection of the amount of control he has over the picture story BSL and the lack of control he has over the BSL story. At this point in Jake's bilingual language development he is not able to benefit from working between the two languages at this level as he does not yet have the English skills to match the task. He seems to be operating solely in BSL and not yet differentiating between the two language systems in his writing. This does not mean that he does not see the two languages as separate, rather it could be an indication of his lack of understanding of the structures of English and how these differ from BSL.

### **7.9.3 The influence of the stimulus on the writing process and outcomes**

The remaining children (Lucy, Simon and Nicola) all produce more examples of correct English in their picture-based text although Lucy and Simon's translation texts in particular are much more animated and lively than their picture-based texts. It seems to be a

combination of factors which creates the contrast between these children's texts. First of all they are driven to try to express the complexities of the BSL story in whatever way they can and so their English resources are stretched. Because they have no control over the BSL stimulus they are stripped of their 'play safe' mechanisms that they use in the picture-based text (such as the repetition of characters names) and because they are very close to, or involved with, the BSL they seem to forget how to use these strategies. Their involvement with the BSL also seems to inhibit their preparation of the written English. In their minds the story is already prepared and ready to write although their representation of it is in BSL. In the picture-based text there is no prepared story only images and so whatever English resources they have stand much more of a chance of being involved at the preparatory stage.

It is important to note that contrary to the assumption made at the outset of this task it has emerged that the picture stimulus was by no means 'language free'. This became apparent as the children all drew on and deployed their repertoire of set English phrases and structures associated with this reading scheme. It could be argued therefore that the picture-based text provided an indirect English stimulus because of these associations. Despite this a comparison was able to be made between an English-related source and a BSL source. For all of the children, the question of influence of BSL on their writing rests on the extent to which they are able to distance themselves from and re-interpret the BSL before writing. They are all able to do this to varying degrees but not to the extent where they bring in the more mechanistic strategies which they deploy in response to the picture stimulus. This would suggest that the BSL source interferes with retrieval of some of the children's knowledge of English structures (notably those with fewer spoken English skills).

The unexpected finding from this analysis is that the children's picture-based texts were more correct but more predictable and less adventurous and generally less complex than the translation texts as the children for the most part remained within the reading scheme language framework. Although for most of the children there is not a marked difference in the length of their two texts (apart from Jake), most of them attempt more complex grammatical sequences in their translation text than they do in their picture-based text. This is mainly evident though their use of simple and subordinate clauses and simple or complex noun phrases. This finding suggests that what the children have formally learnt about writing English (evident in their picture-based writing) is limited compared to their potential for more diverse and complex written expression.

### **COMPARING A BSL STORY WITH A WRITTEN ENGLISH STORY**

#### **8.1 Introduction**

This elicitation activity was set up to investigate how the children used both languages (BSL and English) to compare aspects of a story told in BSL with a written English version of the story. It is important for the purposes of the analysis to explain the way in which the two story versions were developed and the rationale behind this. It was essential to have a video recording of a BSL story told by a native sign language user as in the translation activity (Chapter 6.) The deaf adult was therefore given a short picture sequence story as the source for the BSL story-telling to avoid imposing constraints presented by an English text. The written English version of the story also had to be created in a very specific way. It was important that the children were familiar with the text of the written story so that the activity could focus on comparison and not comprehension. Therefore, the children were given the same picture story sequence and created their own written story in a group writing activity with their regular teacher. The design of two versions of the story used for the elicitation task could not therefore be controlled or managed to present particular points of comparison. Instead, emphasis was placed on the task being realistic and educationally appropriate and then opportunities for comparison (i.e. similarities and differences between the two versions) were sought.

#### **8.2 The procedure for each task**

The rationale for the particular problems chosen to present to the children is explained alongside each individual problem. The written English versions of the stories and a gloss of

the BSL story used are presented in section 8.6. The comparison activity was conducted with each child individually by the researcher. This first set of tasks involved the children first reading the English version of the story which they had written collaboratively with their teacher. They were then asked to watch the BSL version of the story on video tape told by a deaf, native sign language user. The children were told that they were going to be looking for similarities and differences between the two versions of the same story. The children were asked 4 questions about different phrases in the BSL version of the story. For each question posed to the children the sequence of actions and instructions from the researcher, in each child's preferred mode of communication, was as follows:

- Each child read through their written English text which they had prepared in a group with their teacher in whichever way they preferred (voice only, voice and sign, sign only)
- The children were told that they were going to see a story told in BSL on the video. which was similar to their written story the exact phrase 'a little bit the same' was used by the researcher as 'similar' may not have been within the children's repertoire.
- Each child viewed the BSL story and the researcher encouraged general comments or reactions.
- The BSL story tape was reviewed and stopped by the researcher just after each focus sign or sign sequence.
- The researcher repeated the focus sign or sign sequence exactly as presented on the video recording.
- The researcher asked each child to look through their English text and see if they could find anything which meant the same as the sign or sign phrase identified.

To answer the question the children could choose from one of the following phrases which were written and signed for each child, they were asked to write down the symbol given with each phrase:

χ nothing the same in the English

√ something exactly the same in the English

~ something a little bit the same but a little bit different in the English

- Before moving on it was established that the children understood the meaning of each symbol.
- Where it was thought to be appropriate the researcher prompted the child for further explanation or provided some support to enable them to complete the task as if in a natural teaching situation.
- Where there was obvious frustration or failure with the task the researcher curtailed the activity and moved on in order to keep the child's attention and co-operation.

Because of the complexity of what the children were asked to do, and the difficulty of expressing it in accessible terms, the children's individual understanding of the nature of the task will be considered within the analysis of the activities. However, part of the validity lies in the fact that the children were able to do the tasks in a way which indicated that they made sense to them and that their responses were commensurate with what they were required to do.

### **8.3 The transcriptions**

Each transcription presented in the following analysis of the task with each child begins where the researcher has identified the BSL sign or phrase that the child was expected to focus on (i.e. where the researcher repeats the sign/phrase as given on the recording). For an explanation of the transcription conventions please refer to Chapter 5. The transcript stops where the activity is deemed by the researcher to be at an end or where the child indicates that they can not or do not wish to continue. As the researcher attempts to

respond to each child's interaction during the task the individual dialogues develop in diverse ways.

#### **8.4 The researcher's role**

The researcher's role has been discussed generally in the methodology chapter but more specific examples of the issues presented by working closely with the children are raised in this analysis. Because the researcher is familiar with and well known to the children she is able to make decisions about when and where it is appropriate to prompt a child or to curtail an activity. Although this allows for the research to be carried out in a natural setting, the nature of the researcher's intervention has to be acknowledged where conclusions are being drawn about the individual children's potential. The researcher's role is discussed in individual examples where the intervention is significant and where activities are quickly curtailed an explanation is given.

#### **8.5 The analysis of the activity outcomes**

The analysis of the children's responses focuses on the ways in which the individual children use one or other language to mediate the task by providing themselves with an interim translation of the BSL before they move on to searching for the equivalent expression of the same idea in the written English. The actual problems posed to the children were designed to present a clear explanation of this task (see below) but what each child seems to understand by the tasks is considered throughout the analysis. Evidence is sought of instances where the children are able to work directly from the BSL to the written English and what factors seem to influence this for the different individuals.

## 8.6 Presentation of the analysis

Because the 6 children were in two different schools (3 children in each) the written English story each group had generated with their teacher was slightly different although the same BSL story was used for both groups. The following presentation of the analysis reflects this in that the problems presented to each group are introduced and discussed separately.

Below is a gloss of the BSL story told by the deaf adult. This is presented solely for the purpose of illuminating the tasks undertaken by the children. This gloss was not seen by the children. The phrases underlined are those selected and presented to the children for comparison with the written English story. A gloss is a literal English translation of each BSL sign. Each English word (or combination of words separated by a hyphen) represents a sign but additional meaning such as that expressed by facial expression or other non-manual features is not transcribed. For this to be achieved a full written English translation would have to be provided which would detract from the original BSL. It is stressed that presenting the BSL in this way does not give a true representation of the task that the children were asked to complete. This is because a written gloss cannot convey all of information conveyed by the BSL version. The gloss of the story is included here only to provide a context for the tasks. Some English punctuation has been added to the gloss to preserve the overall sense of story. Fuller descriptions of each BSL phrase selected and how different meanings are specified in both languages are given with each task.



## GLOSS OF THE BSL STORY

HAVE STORY WHAT-ABOUT WILF, WILMA, MUMMY AND FLOPPY.

THEY THOUGHT GO PARK SWINGS. ALL WALK, WILMA HAT-CAP COAT, ALL COAT.

WALK PARK FIELD SAW HAVE WHAT WATER LAKE.

LADY HAVE TWO DOGS. LADY TREE-STICK THROW ONTO-WATER. DOG RUN SWIM STICK-MOUTH TURN-ROUND SWIM DROP-STICK. LADY PICK-UP THANK YOU. THROW DOG RUN SWIM STICK-MOUTH SWIM BACK DROP-STICK. LADY GOOD.

TWO DOGS TAKE-TURNS, ALL WET IN WATER.

MUMMY THOUGHT OH...WANT FLOPPY SAME. STICK-SHAKE THROW ONTO-WATER FLOPPY TURN-AWAY. MUMMY FED-UP TRY AGAIN. STICK-SHAKE THROW ONTO-WATER FLOPPY TURN-AWAY. MUMMY FED-UP.

WILMA TRY STICK-SHAKE THROW HAT BLEW-OFF ONTO-WATER.

FLOPPY LOOK RUN SWIM HAT-MOUTH TURN-ROUND SWIM BACK DROP-HAT. WILMA PICK-UP THANK YOU. HAT WET DRIP.

THANK YOU FLOPPY GOOD.

Below are the scripts of the written English stories used for the comparison work produced by the two groups of children with their teachers.

**Story text used by group 1. (Mark, Jake and Hannah).**

**BIFF'S NEW HAT**

Mum, Biff and Chip walked to the park. Biff was wearing her new hat.

In the park Mum, Chip and Biff watched an old lady with two dogs. The old lady threw sticks into the water. The dogs jumped into the water and fetched the sticks in their mouths.

Mum, Biff and Chip wanted Floppy to do the same.

Mum said " Are you ready Floppy and I will throw the stick?"

Mum threw the stick. Floppy ignored her because he did not want to get wet.

Mum threw the stick again. Floppy still ignored her.

Mum was fed up because Floppy did not want to play.

Biff said " I will try now". Biff threw the stick but the wind blew her hat off and it went into the water. Biff nearly fell over.

Floppy ran very fast and jumped into the water. Floppy fetched the hat in his mouth and brought it to Biff.

Chip and mum said "Hurrah good boy!"

Biff said "Thank you for bringing my hat."

**Story text used by group 2. (Nicola, Simon and Lucy)**

**BIFF'S NEW HAT**

Mum, Biff and Chip went to the park. Biff was wearing her new hat.

In the park Mum, Chip and Biff saw Grandma with her two dogs called John and Toby.

Grandma threw a stick into the water. John ran and fetched the stick in his mouth and ran back to Grandma.

Then Grandma threw a stick into the water for Toby. Toby ran into the water, fetched the stick in his mouth and ran back to Grandma.

Mum had a good idea. She wanted Floppy to do the same. Floppy did not want to play.

Mum said "Come on Floppy!" Floppy ignored mum.

Biff threw a stick into the water. Biff's hat flew off onto the water. Floppy ran very fast into the water. Floppy picked up Biff's hat and brought it back to Biff.

Floppy was very proud. The hat was dripping wet.

Everyone said "Well done Floppy!"

## 8.7 Analysis of the children's responses to comparison problem 1.

### 8.7.1 Group 1

The BSL sign selected from the story is one sign which conveys the action of a dog dropping a stick from its mouth which can be glossed as DROP-STICK. The nearest possible English equivalent in the text is fetches the sticks in their mouths.

The BSL version provides the detail of the way in which the dog returns the stick to its owner. In the English version of the story the verb fetches is used which suggests that the stick was retrieved by the dogs and brought back but the manner in which the stick is returned is not specified as it is in the BSL. This problem of comparison was selected because of the very different ways in which the returning of the stick is specified in each case.

*Mark's response* (R = researcher, M = Mark)

R (repeats sign as tape)

M nothing (does not check text)

Mark communicates about the task in intelligible but not confident voice and occasionally combines this with the use of some BSL signs. He works silently between the two languages moving directly from the BSL to the English without voicing or signing an interim translation. He seems to know what he is looking for in the text in response to the target sign. He does not refer to his written story to answer the questions. This suggests that he can remember the content of the English text without referring back to it and that he is able to focus on the content rather than seek equivalence of form. Mark's response is not sound evidence that he has made an informed decision but his confident response from memory leads us to speculate that he is clear about the purpose of the task. Because of Mark's complete, definite and negative response the researcher moves on.

***Jake's response*** (J= Jake)

R (repeats sign as tape)

J THANK-YOU LADY (searches text) NOTHING

Jake communicates about the task in BSL. He first establishes the significance of the target sign for the story as a whole before looking for any of the English in the text by reminding himself of the sequence of events (the dog dropped the stick at the lady's feet and she said thank you). He interprets the significance of the target sign before tackling the English text thus providing an interim stage for himself in BSL. From his response it is difficult to ascertain whether he has made an informed decisions or not been able to tackle the task but his efforts to contextualise the BSL sign suggest that he is searching the English text with a specific purpose. As with Mark, the researcher moves on without probing for more information as the response has been negative.

***Hannah's response*** (H = Hannah)

R (repeats sign as tape)

H (searches the text silently with finger underneath the words, stops and reads aloud) their mouths

R {their mouths ... is it the same.. (repeats the sign as tape)  
{ THEIR MOUTHS...SAME

H no

R {what does it mean (repeats the BSL as tape) what's the dog doing  
{ MEAN WHAT WHAT DOG DOING

H giving it to the lady

R yes, have you got that (points to the text)

H no

Hannah communicates about the task using predominantly spoken English. She tackles the task on two levels. She at first goes straight to the text without translating the sign aloud and looks very specifically for a word in the English which relates to the sign (she selects their mouths) without checking the whole meaning of the English phrase in relation to the target sign. She does, when asked, give a correct English interpretation of the sign within the context of the story and can then comment without difficulty on whether that exists in the English or not. In this instance Hannah needs to be 'talked through' the process as she is not yet confident to move straight from the BSL to the written English. Because Hannah interacts with the researcher while she is working out her response the researcher continues to engage her in further dialogue.

8.7.2 Group 2

For this group the same BSL sign is selected (DROP-STICK) but the nearest English equivalent in their slightly different text is fetches the stick in his mouth and ran back to Grandma. This comparison problem presents largely the same issues as it does for group 1, although the returning of the stick to the owner is made more specific in the English this time. This does not however bring the BSL and the English closer together in terms of the meaning they express as the English here becomes concerned with the sequence of fetching and returning the stick whereas the BSL focuses only on the moment of the return of the stick to the owner.

<i>Nicola's response</i> (N = Nicola)	
R	(repeats sign as tape)
N	(repeats sign as tape and searches text, points to text and mouths) <i>grandma I didn't see</i>
R	(asks) { SAME OR NOT-QUITE { think same or bit different
N	YES

R (asks) {EXACT SAME  
                  {exact same

N NO

Nicola successfully locates the nearest equivalent in the English text without rephrasing in BSL or translating the BSL into English. She then comments on why the BSL is different from the text, i.e. that grandma is not mentioned in the BSL version. Nicola does however move successfully from the BSL to the English text without needing to work out an interim translation in English or an interpretation of the BSL.

*Simon's response* (S = Simon)

R (repeats sign as tape)

S (repeats sign as tape) put it in his mouth

R (shakes head and repeats sign as tape)

S {drops? ..... drop it?  
  {DROP?   (as tape) DROP? (alternative sign using hand not mouth)

(searches text) no drop ....oh have! (points to word in text)

R {drip  
  {DRIP

S (searches text) {what's it start drop?  
                  {START DROP?

R is it there

S (shakes head)

Simon works out a verbal English translation of the BSL before tackling the text.

Interestingly, to confirm the meaning of the BSL he gives a different BSL sign for DROP which would not be contextually correct if used in the story. He then searches the text with

the English word drop firmly in his mind and although he is unsure of the exact spelling he is looking for he is able to make some guesses. Because Simon thinks aloud in English in doing this task we can see how approaching the English text with one particular word in mind rather than the overall sense of the BSL might limit his ability to see how the same idea can be expressed differently in English.

***Lucy's response*** (L = Lucy)

R (repeats sign as tape)

L (repeats twice as tape) {put down or pick-up?  
  {DROP OR PICK-UP?

R (repeats as tape)

L {put down  
    {DROP (as tape) (searches text and reads aloud) fetches the stick in his mouth and ran  
    back to grandma

R {but where is .....  
    {BUT WHERE DROP-STICK (as tape)

L NOTHING

Lucy tackles the task by establishing the exact meaning of the BSL before she approaches the English text. Having done this she is then able to consider the nearest English equivalent phrase as a possible match in terms of meaning. It is interesting that even though Lucy establishes for herself the spoken English translation of the BSL sign, this does not limit her search to that particular written word. It is impossible to say how she makes the connection between the two very different versions, although we might speculate that her established confidence with the BSL meaning allows her to be more flexible in her search for an English equivalent. This might reflect a different understanding of the task or a greater maturity in terms of translation skills. She seems to have been able to move away from the actual BSL

expression and when the researcher brings her back to it, in an attempt to probe further, she loses confidence in her previous answer.

**8.8 Analysis of the children’s responses to comparison problem 2.**

**8.8.1 Group 1.**

The BSL sign picked out of the story is one sign which represents the action of the two dogs taking turns at going in and out of the water to fetch the stick which could be glossed as TAKE-TURNS. The way in which this is signed with two hands may not be familiar to all of the children although the one handed sign TURN would be. There is no near equivalent in the English text only an acknowledgement that there are two dogs in the phrase the dogs jumped into the water and fetched the sticks in their mouths. This problem is interesting for analysis because in order to tackle the search for an equivalent expression in the English text it is likely that the children will need to clarify the BSL meaning.

*Mark's response*

R (repeats sign as tape)

M different (does not refer to text)

Mark does not need to check his understanding of the BSL sign. He again demonstrates his memory of the content of the English text by answering without reading through it. He seems to be able to move from the BSL to the English, focusing on meaning, without needing to establish an interim translation or interpretation of the BSL sign phrase. Mark is reluctant to engage with the researcher about the task although willing to answer and so the researcher does not prompt for an explanation of his answer.



### ***Jake's response***

R (repeats sign as tape)

J NOTHING

R MEANS WHAT TAKE-TURNS (signs as tape)

J MEANS DOG TAKE-TURNS (as tape)

Jake is confident that no English equivalent of the BSL sign is present in the text. This suggests that he is clear about the meaning and context of the target sign and so does not create an interim translation or paraphrase for himself. The researcher checks that his answer is based on an understanding of the BSL and not just on a desire to move on or complete the activity.

### ***Hannah's response***

R (repeats sign as tape)

H (looks at text) no nothing

R (asks) {means what  
                  {MEANS WHAT

H I don't know.... {swapping!  
                              {TAKE-TURNS! (signs as tape)

R {yes they're taking turns aren't they...have you got that (points to text)  
   {YES TAKE-TURNS (as tape)       HAVE

H no

Hannah moves directly from the BSL to the written English and is correct in her initial response. Like Jake, she seems more confident this time perhaps because she knows there is no equivalent from her memory of the written story and so is not concerned with trying to provide an interim translation to help her look for the English. When she is asked for a

translation she is unsure at first but eventually provides a good explanation which suggests that she did not have one mentally prepared before she tackled the task.

### 8.8.2 Group 2

For this group the same BSL sign is selected (TAKE-TURNS) and there is also no obvious equivalent in the English text. The problems presented by this task are therefore comparable to group 1.

#### *Nicola's response*

R (repeats sign as tape)

N (searches text then looks back at researcher for help)

R (repeats sign as tape)

N (searches text) {NOTHING  
  {nothing

R (asks) MEANS WHAT TAKE-TURNS (repeats sign as tape)

N DON'T KNOW .... TURNS (uses alternative one-handed sign and searches text again)  
WHERE? NOTHING

Nicola also moves directly from the BSL to written English and is again confident that this idea presented in BSL is not expressed in the English text. Nicola does not have a mental English equivalent prepared to help her do the task but she can provide one if asked. It is interesting that when the researcher actually asks for an explanation of the BSL sign she does go back to the text to check that an English equivalent is not there. This might suggest that either her initial answer is a guess or that the researcher's checking leads her to think that she is wrong and so she checks again.

### *Simon's response*

R (repeats sign as tape)

S {turns

{TURNS (uses alternative one handed sign and shakes head)

R (asks) {is there nothing

{NOTHING

S (shakes head)

Simon once again establishes the spoken English translation of the BSL before he tackles the comparison task. He also slightly modifies the BSL sign, replacing it with the one with which he will be more familiar. He seems to prefer to establish some familiar ground in terms of a spoken English translation before tackling the task, even though on this occasion he does not refer back to his text. This might suggest that once he has established a spoken English version of what he is searching for he can use his verbal memory of the text to seek a particular word or phrase.

### *Lucy's response*

R (repeats sign as tape)

L {turn ....no

{TURN (uses alternative sign to tape and searches text)

Lucy establishes the English translation and a more familiar BSL sign before tackling the task. Like Simon, she appears to need an interim stage where she verbalises what she will be looking for in spoken English before searching the text. Lucy does return to the text before responding which suggests that she understands the task and what she is searching for.

**8.9 Analysis of the children’s responses to the comparison problem 3.**

**8.9.1 Group 1**

The BSL sign selected from the story is one sign which represents the action of shaking a stick in front of a dog to get its interest before throwing it. This could be glossed as STICK-SHAKE. The nearest equivalent in the English text indicates that the mother is trying to get the dog interested: Mum said " are you ready Floppy and I will throw the stick?". This comparison problem provides an interesting example of the different way in which the BSL and the written English convey the meaning of one of the pictures in the story sequence where the mother is bending down to the dog with the stick before she throws it. In the BSL the mother’s intentions are expressed through action. In the written English what the mother is saying about her intentions has been specified through direct speech. In both cases the intention of the mother is the same. This intention is overtly expressed in the English but has to be inferred in the BSL. This problem is interesting for analysis because it requires the children to recognise that both phrases refer to the same event even though they present different perspectives on that event.

*Mark's response*

R (repeats sign as tape)

M same (makes no reference to text)

R (repeats sign as tape)

M SAME (searches text and with finger identifies written phrase are you ready Floppy?)

Mark again is confident to move from the BSL to the English focusing on content rather than form. He is able to identify the written English equivalent of the sign phrase without first rehearsing this verbally. He demonstrates here that he is able to infer that the action of

mum shaking the stick in front of the dog could be interpreted as asking are you ready Floppy?

*Jake's response*

R (repeats sign as tape)

J STICK.....STICK.....I-DON'T-KNOW (looks at text) .....NOTHING

Jake has to go through a process of interpretation this time and he provides himself with an interim stage by clarifying what it is that is being shaken in the BSL phrase. Having established this he is not then able to move on and seek an English equivalent perhaps because he does not have the English skills to guide him as to what to look for. To solve the problem he seems to rely on more of an intuitive feeling of non-recognition of that particular idea in the written English. His English skills are perhaps not sufficiently developed to enable him to see the equivalent idea is present in the English text although in a very different form. The researcher does not prompt Jake any further because he is clearly struggling with the problem set.

*Hannah 's response*

R (repeats sign as tape)

H (searches text) no nothing

R (asks) nothing

H it says (reads) mum wanted Floppy to do the same ...not what she said (points to tape)

R {that's before isn't it .. what about this (repeats sign from tape) what's she  
{BEFORE WHAT  
  
{doing  
{DOING

H letting Floppy, letting Floppy looked at mummy

R {yes...so is there anything a little bit the same there (points to text)  
{ LITTLE SAME

H (reads) mummy threw the stick...no

R {it's not that is it ...what about this (points to text)  
{NOTHING

H (reads) are you ready Floppy?

R (repeats as read by H) {are you ready Floppy? (repeats sign as tape) is that the  
{READY FLOPPY

{same or a little bit the same  
{SAME OR LITTLE SAME

H a little bit the same (reads) are you ready Floppy?

Hannah moves from BSL to English meaning without any difficulties this time and finds the appropriate place in the text where the equivalent for the BSL phrase might be located before she discounts the possibility of an equivalent existing. It is interesting that when asked for a translation Hannah can actually respond in spoken English but that her translation of the BSL is very literal and shows little evidence of an ability to analyse or interpret the mother's actions. Hannah's strong spoken language skills do not necessarily provide her with an advantage in solving this problem. Hannah seems not to be confident enough to suggest that a near English equivalent might be present in the text and can only move onto this stage of inference with a lot of adult prompting. The researcher prompts extensively here because Hannah immediately finds the right area of the English text, showing that there is some potential for solving the problem. Because of the level of intervention here the activity turns naturally into a teaching activity and Hannah's answer is by no means evidence of her ability to see an equivalence between the two phrases. The processes she goes through however are still relevant for analysis and pertinent for the overall conclusions.

### 8.9.2 Group 2

For this group the same BSL sign is selected (STICK-SHAKE) and the nearest equivalent phrase in the English text is Mum said "Come on Floppy!" which indicates that mum is trying to interest Floppy in fetching the stick before she throws it. As for group 1. The issue for these children concerns the different ways in which the mother's intentions are specified (action and direct speech).

#### *Nicola's response*

R (repeats sign as tape)

N (repeats sign as tape, looks uncertain)

R (reviews tape again)

N OH STICK-SHAKE THROW...YES.....(searches text points and reads part of text aloud - although not intelligible)

R (shakes head) MUM STICK-SHAKE (repeats as tape)

N (shakes head)

R (asks) MEANS WHAT... WHY MUM STICK-SHAKE

N MAKE FLOPPY GO (searches text) .... NO

Nicola extends the target sign in BSL before she tackles the text, as though she needs to clarify the meaning of the targeted sign. Like Hannah she is not confident or flexible enough at this stage to suggest Mum said "Come on Floppy!" as a likely equivalent. Because of the extended discussion Nicola has about the actual BSL phrase it may be that she becomes too focused on the actual form of the BSL to be able to make a broader interpretation of the meaning of the phrase.

### *Simon's response*

R (repeats sign as tape)

S (watches for sign to be repeated a few times then shakes his head)

R (asks) { what is it  
          { WHAT

S (repeats sign as tape back to researcher)

R { what's she doing, what's mum doing  
   { WHAT-FOR MUM DOING (repeats sign as tape again)

S { Floppy come on...come on Floppy  
   { STICK-SHAKE

R come on Floppy { you've got that haven't you  
                          { YOU HAVE (points to text)

S (looks at text and reads aloud) mum said come on Floppy

Simon once again needs to translate the target sign into spoken English before he can tackle the task. This is prompted by the researcher because it is how he has tackled the other tasks. It is interesting that when asked to translate the sign before looking at the text he suggests the exact English phrase which is already present in the English text. In this instance he has actually paraphrased the target sign not translated it. This may be because the researcher has asked why mum is shaking the stick (in BSL) at the same time as she was asking what mummy was doing (in spoken English). This was not intentional but a result of mixing the two languages. This paraphrase supports Simon's approach to the task more than his literal translations usually do. If he had not done this he may well have been hampered in his approach to the text by a very literal translation for which there would not have been a reasonable equivalent. However, this still underlines his need for an interim stage in the process in spoken English.



### ***Lucy's response***

R (repeats sign as tape)

L what?

R (repeats sign as tape)

L (nods and repeats sign as tape) stick (searches text stops and reads aloud) come on Floppy

Lucy contextualises the target sign for herself in BSL by identifying what it is that is being shaken by mum but this does not hamper her in her search for the expression of an equivalent idea in the English text. Although she uses spoken English this does not limit her into looking for the exact written equivalent to what she has spoken. She seems to be able to employ some referential skills in order to successfully identify an appropriate match between the BSL and the English. The responses of both Lucy and Simon suggest that within-language (BSL or English) translation work might support their bilingual language development in that it would be good practice for this type of activity.

## **8. 10 Analysis of the children's responses to the comparison problem 4.**

### **8.10.1 Group 1**

The BSL sign picked out of the story is one sign which represents the action of the dog turning its head away from the mother when she tries to interest him in the stick fetching activity. This can be glossed as FLOPPY TURN-AWAY. The nearest equivalent phrase in the English text is Floppy ignored her. This is interesting for analysis because although the two phrases seem to express exactly the same idea, the actual verb IGNORE is not specified in the BSL although the intention to ignore is expressed clearly through the action and attitude of the dog turning away. The name of the dog (Floppy) is not used in the BSL although this information is specified through the characterisation given in the sign.

***Mark's response***

R (repeats sign as tape)

M {same  
{SAME

R (asks) {where  
{WHERE

M (searches text and with finger underlines Floppy ignored her)

Once again Mark moves straight from the BSL to written English without providing himself with an interim translation. When prompted by the researcher he is able to identify the exact phrase that he considers to be a match for the BSL although he does not need to refer to the text to respond to the task.

***Jake's response***

R (repeats BSL as tape)

J I-DON'T-KNOW

R (repeats BSL as tape and asks) MEANS WHAT (repeats as tape again)

J IGNORE (uses alternative sign) YES (searches and finds in text)

Jake in this instance is initially unable to respond because he is unsure of the exact meaning behind the target sign. When prompted by the researcher he provides a sign for IGNORE with which he is more familiar. This clarifies the meaning for him and he is then able to successfully complete the task. It seems that Jake needs a stage in the process which enables him to clarify the BSL using another sign before he can begin to refer to the English text. This contrasts interestingly with the children who insert a verbal interim stage in spoken

English and raises questions about the individual children's proficiency in both of their languages and how this affects the task.

### ***Hannah's response***

R (repeats BSL as tape)

H (searches text and reads aloud) ...ignored her

Hannah is able to move directly from the target BSL to the written English meaning. She refers to her text which suggests that she has an idea of what English she might be looking for.

### **8.10.2. Group 2**

For this group the same BSL sign is selected (FLOPPY TURN-AWAY) and the nearest equivalent in the English text is Floppy ignored mum. This task presents the same analysis issues as identified for group 1 as the two written English phrases are almost identical.

### ***Nicola's response***

R (repeats BSL as tape)

N IGNORE (uses alternative sign) IGNORED MUMMY (searches text)

WHERE? (searches text and reads) ignored mum

Nicola, like Jake, substitutes the target sign for a BSL sign for IGNORE that she is more familiar with before moving to search the English text. By doing this Nicola clarifies the meaning of the BSL before she searches for the expression of an equivalent idea in English. Having done this she does not seem to need to prepare an English translation as she can

more readily identify similarities between the BSL and the English phrase because of the match between the sign and word IGNORE/ignore.

### ***Simon's response***

S (responds to tape before researcher has time to repeat the target sign)

{ignore! ignore!

{IGNORE ! (uses alternative sign, searches text saying it aloud to himself and reads aloud) Floppy ignored mum

Simon is more than delighted this time to be able to translate the target sign so quickly and he provides both an English and a different sign equivalent. Having done this he can successfully identify the equivalent expression in the written text.

### ***Lucy's response***

R (repeats as tape)

L {ignore

{IGNORE (uses alternative sign) (searches text and points to Floppy ignored mum)

Lucy responds in the same way as Simon to this task establishing an English translation and an alternative BSL sign before searching the text.

## **8.11 Discussion**

### **8.11.1 The children's understanding of the task**

Throughout this analysis there is a difficulty in establishing to what extent the children's differing responses and evident approaches to the task reflect their understanding of what is required of them. The researcher used the terms 'mean' and 'same' in her explanation of the

tasks to the individual children because this was a term frequently used by themselves and by the deaf adults they worked with. However, a discussion of their understanding of this did not take place. On several occasions the researcher became involved in the activity to try to establish the extent to which the children were understanding the activities or to support their understanding of what is required. In this respect some of the activities had a teaching element as a result of the natural situation in which this research took place. From the analysis of the individual responses there does seem to be a difference between the children who think they are looking for something the same in terms of form (Simon, Jake, Nicola) and those who seem to understand that they are looking for something the same in terms of meaning (Mark, Lucy, Hannah). However it can not be specified whether this is a true reflection of their understanding of the task or in fact of their current level of ability or maturity in terms of this type of analytical activity. The fact that all of the children were able to engage meaningfully in the comparison tasks suggests that they all did appreciate the requirements of the task even though, as individuals, they may have interpreted the directions slightly differently.

#### **8.11.2 Strategies used by the children to move from BSL to written English.**

These strategies seem to fall into three main categories. Without more longitudinal data it is not possible to comment on whether or not these might be developmental stages for all of the children, whether they are a result of the individual learning styles and strategies or whether they reflect different stages of progression through a common learning cycle. Because of the very individual nature of each child's sign bilingualism and their differing bilingual language skills, it might be suggested that the categories described reflect this individuality and the fact that for each child the path to developing their sign bilingual skills is different.

### *Searching for an expression of the equivalent idea with no explicit interim stage*

Some of the children were able to work directly from the meaning of the targeted sign to the meaning of the written English without inserting an interim stage by using BSL or spoken English. In doing this it may be that they were able to approach the task in a more flexible and 'uncluttered' way because they were then able to concentrate on recalling the meaning of the text rather than becoming entangled with specific English words and phrases. When there was no equivalent in the English text this process was very quick and efficient as Mark demonstrated. All he had to do was mentally recall whether or not something in the written text conveyed a similar message to the one given by the targeted sign and then immediately discount it if not. By-passing an interim stage seemed to enable individuals to provide an immediate (usually accurate) answer although it did not lead to the development of a discussion about the two phrases under scrutiny. By-passing an interim stage also seemed to enhance the children's ability to concentrate on similarity in terms of meaning rather than form. Working in this way did however rely on a confident familiarity with the meaning of both versions of the story.

### *Inserting a BSL interim stage*

One of the interim stages, used by Jake and Nicola particularly, involved contextualising the sign phrase identified either by offering an alternative sign or by adding some extra detail in BSL. It may be that the children needed to replace the targeted sign in a context because it had been repeated out of context by the researcher as a means of identifying it away from the rest of the body of the story. Doing this also prepared the children for searching the English text by providing them with some familiar ground in the language with which they were most confident.

### *Inserting a spoken English interim stage*

Some of the children, in particular Simon and Lucy, articulated the nearest spoken English translation of the identified sign phrase before moving on to look at the text. This was often accompanied by an alternative although decontextualised, sign or gloss that they were familiar with which replaced the sign given in the BSL version. From this interim step they then seemed more confident to approach the written English text as they were looking for a written representation of what they had verbally prepared. Although the children appeared to be advantaged in this case by their spoken English skills it could be that this made them less flexible in their search for an equivalent phrase in the text because they had already decided on the words or the phrase that they needed to find. This elicitation activity therefore presented an interesting contradiction in terms of the relationship between the children's developing English skills and their ability to use one language to talk about another.

### **8.11.3 Differences between the individual children**

The different processes the individual children went through to solve the problems presented by the task and the effect that their individual strategies had on their overall success with the tasks will be discussed here. It is hoped that this information will give us some indication of how bilingual deaf children perceive and interpret the two languages they are working with and what tacit skills they have gained from moving constantly between a visual-gestural and written/spoken language.

At no point during the tasks did Mark use an interim translation or interpretation of the BSL before tackling the text even though he was able to make very good use of his spoken English skills in other contexts. In addition to this, he also demonstrated that he could be flexible in his approach to meaning equivalents and identify a match between the BSL and the written English which was structurally very different but where the meaning conveyed

was similar. Mark's oral skills were not directly an advantage here although we could argue that because of these skills his grasp and recall of the written form was more confident thus helping him to move easily between the two languages.

For 3 out of the 4 tasks Jake needed to place the targeted sign in a familiar BSL context. Only on one occasion in these examples did he move directly from the meaning of the BSL to that of the written English. This is where the BSL sign needed no inference (TOOK-TURNS). When Jake had established the more literal meaning of the targeted signs he was still not fully equipped to locate any possible matches in the English text except where a BSL sign could be matched with a particular English word such as IGNORE.

Hannah was probably the child with the most well developed spoken English skills but interestingly she, like Mark, did not use them to provide herself with an interim spoken English version of the targeted sign. For 3 out of the 4 tasks Hannah moved directly from BSL to English meaning by-passing a middle stage. It is worth noting that when Hannah was asked for a translation of the targeted sign phrase she tended to provide a paraphrase of the main idea which supported her search for a written phrase which conveyed the same idea. Although Hannah often needed to talk through the task she appeared to be in a strong position to further develop these analysis skills because she could consider whether the different phrases expressed the same meanings, interpret the meaning of the targeted signs and talk about this inference rather than become focused on the form of the phrase alone.

Nicola either moved directly from the meaning of the BSL to the English meaning or she inserted a BSL interim stage. She did not have the spoken English skills that some of the other children had but this did not necessarily disadvantage her in her response to the task in that she was able to go to an accurate point in the text to look for an English equivalent.



The fact that she was not able to suggest a match between the targeted sign STICK-SHAKE and the written English come on Floppy is not a reflection of her lack of understanding of the written English but of her inability to see that the same idea can be expressed in a different way in BSL.

Simon always inserted a spoken English interim stage in order to tackle the task and usually also substituted the targeted sign with a more familiar, but decontextualised, BSL sign. The result of this was that he was quite specific in his search in the English text in that he tried to find the word for word equivalent for his spoken interpretation of the targeted sign. This system worked for him for much of the time but fell down where he was asked to consider come on Floppy as a possible match for STICK-SHAKE and he was unsure of how appropriate this was. Simon was not necessarily advantaged by his spoken language skills in this situation because he was likely to focus on the nearest recognisable English word which matched the targeted sign rather than focus on the whole meaning.

Lucy used similar strategies to Simon to respond initially to the task but was able then to move away from the spoken English equivalent to consider a broader possibility of meanings. From this first analysis it would seem that she was confident in her expression of both BSL and spoken English but could also think about meaning more broadly without becoming focused on the form of the language by her interim translations.

## **8.12 Conclusion**

Being able or choosing to verbally translate the targeted sign aloud at first seemed to be advantageous in approaching these comparison problems. However, we have seen from this discussion that although this may have provided an initial foothold into the task these skills did not always have attendant advantages in this context. Far more important is a deeper

understanding of how the two languages convey meaning differently and how different expressions in both BSL and written English can be interpreted. This relates to observations of hearing second language learners where overt translation is usually the mark of a less well developed L2. The ability to focus on the meaning rather than on the form of the phrases being contrasted enabled the individuals to recognise equivalence even where certain ideas were differently specified.

Despite their individual approaches to the task nearly all the children demonstrated that they had a grasp of the separateness of the two languages. Some of the children separated the languages at the interim stage (Simon, Lucy) and others separated them by accepting structurally very different equivalents in the written English (Mark, Lucy, Hannah). Jake is the only individual for whom the boundaries seemed blurred in that he was only successful where a (re-phrased) BSL sign matched an English word (e.g. ignored) and could not usually work with the targeted sign as it stood. This observation will be followed up in an analysis of the comparison task work in Chapter 9. where the task is differently sequenced so that the children work from the written English to the BSL.

It is interesting that 4 of the children tackled the task by bringing the targeted BSL sign closer to themselves and their preferred mode of communication. We can speculate that this was because they found approaching an English text very demanding and were in some senses going into unknown territory so they established their confidence with the content and meaning of what they knew first. This will be further explored by looking at their responses to the comparison task in Chapter 9. which requires them to move in the opposite direction from the written text and to the BSL.

The most significant issue arising out of this analysis relates to the potential of the creative research methodology to lead to original findings about individual children's sign bilingualism. The data gained from this comparison activity provides us with considerable insight into how individuals move between their two languages and how they use one language to reflect upon and talk about another. Although there are methodological issues which are intrinsic to studying in this area, the design of the activity and the way in which is carried out in a natural setting has allowed for new data to be collected. These findings contribute to our understanding of the linguistic processes involved in using and moving between sign language and written English which will support the continued development of educational policy and classroom approaches in this area. These implications are discussed in the concluding Chapter 10.

**COMPARING A WRITTEN ENGLISH STORY WITH A BSL STORY**

**9.1 Introduction**

The second comparison activity was set up to seek to identify differences between the children's comparative analysis skills when they were asked to start with phrases identified in the written English text and find the expression of the equivalent idea in the BSL version of the story. It was anticipated that the children would find it easier to work from a BSL story source rather than an English text as many of them experienced some difficulty with reading. BSL was used as the source language in the first comparison activity to give the children ample opportunity to engage with this activity.

This activity took place two months after the initial comparison activity. The same written English and BSL version of the story were used with both groups as for the initial comparison task. The way in which these stories were generated has been explained in Chapter 8. The gloss of the BSL story and the written versions can be referred to in Chapter 8. Issues related to the role of the researcher in the delivery of these tasks are parallel to those discussed in Chapter 8 and specific examples are identified in the discussion of each task. It should be noted that because the children had already completed the initial comparison tasks they were very familiar with both stories and approached these questions with more confidence. The children's familiarity with the stories is not considered to raise any methodological problems because the emphasis of the analysis is on the processes observed in the children rather than on the final outcomes or answers to the task. Because the children were more confident in their approach to this second comparison activity the researcher was able to prompt them more frequently for further explanations of their

responses. Out of the four problems posed to the children two of them focus on totally different aspects of the story, whereas the other two present a comparison problem which uses the same story material although the problem is presented in reverse. This is taken into account in the analysis of individual children's responses to those problems.

## **9.2 The procedure for each task**

This aspect of the comparison work involved the children in first reading through the English version of the story that they had prepared collaboratively with their teacher and then looking at the BSL version of the story on video. The children were now very familiar with both the written and the BSL version of the story. The children were told again that they were going to look for similarities and differences between the two stories. Both teachers had prepared the children to read back the text 'aloud' using Sign Supported English. The children were posed 4 comparison problems in total about the different phrases in the written English story. For each problem posed to the children the sequence of actions and instructions from the researcher, in the child's preferred mode of communication, was as follows.

- Specific written English phrases were highlighted by the researcher in front of the children and they were asked to re-read them in their preferred mode of communication.
- The relevant section of the BSL version of the story was then viewed on video
- The children were asked to look at the BSL section of the story and see if there was anything which meant the same or similar to the highlighted written English text.
- The children were given the choice of stating one of the following in response to the task:

$\chi$  nothing the same in the BSL

$\surd$  something exactly the same in the BSL

$\sim$  something a little bit the same in the BSL

- As with the first task, where it was thought to be appropriate the researcher either prompted the child for an explanation or moved on to the next problem.

From the following analysis it will be seen that, as with the initial task, discussed in Chapter 8, the children all understood that they were looking for something similar in the BSL to the identified written English. There are differences however between the children who sought to find equivalence in terms of form and those who looked for equivalence in terms of meaning. In the analysis of this an attempt will be made to identify whether this discrepancy reflects the children's current language abilities or their understanding of the task.

### **9.3 The transcriptions**

The transcriptions presented in the following analysis of the task with each child begin where the researcher has identified the written English phrase that the children are expected to focus on. For the transcription conventions please refer to Chapter 5. The transcript stops where the activity is deemed by the researcher to be at an end or where the child indicates that they can not or do not wish to continue.

### **9.4 The analysis of the activity outcomes**

The analysis of the children's response focuses on the ways in which the individuals use one or other language to mediate the task by providing themselves with an interim translation of the written English expression before they move on to search for the equivalent expression

of the same idea in the BSL. Evidence is sought of instances where the children are able to work directly from written English to the BSL and what factors seem to influence this for individuals. Finally, the ways in which the different children use their two languages to talk about the differences between the written English the BSL and what constitutes a significant difference in their eyes is also considered.

## **9.5 Presentation of the analysis**

The following descriptions of the different children's responses to the task are followed by a discussion on how the 6 children used both languages to solve the problems presented by the task and how each child expressed their view of the differences between the written English and the BSL. The English source text for group 1 was different from the source text for group 2, although the BSL version was the same. Therefore the initial written English phrases presented to each group were different and this generated slightly different activities between the groups. Because of this, each group's response is described and discussed separately.

## **9.6 Analysis of the children's responses to comparison problem 1.**

### **9.6.1 Group 1 (Mark, Jake and Hannah)**

The written English clause highlighted in the story is Mum, Biff and Chip wanted Floppy to do the same . The nearest BSL equivalent in the video story can be glossed as MUM THOUGHT OH ...WANT FLOPPY SAME. Neither of these clauses were areas of focus in the initial comparison activity. Structurally these two clauses are quite similar and they express the same idea. The main difference between is that several characters are mentioned by name in the English version of the story but only MUM is specified in the

BSL story. This is not an omission but a result of the two different interpretations of the picture story as explained in the introduction.

**Mark's response** (R = Researcher, M = Mark)

R (highlights target phrase in text)

M (reads highlighted section silently) tick (points to tick - the symbol to indicate that the BSL is the same)

R {you think it's a tick (points to text)  
{THINK TICK

M yeah same (re-reads text) NO WIGGLY-LINE (the symbol meaning that the BSL is a little bit the same)

R {a wiggle why  
{WIGGLY-LINE WHY

M {because (points to text) mum wanted Biff and Chip (points to tape) nothing  
{BECAUSE MUM WANTED NOTHING  
  
{said  
{SAID

Mark reads the highlighted text silently before looking at the relevant video clip of the BSL story. He gives his response without reinforcing or repeating either the BSL or the English thus avoiding an interim stage. He does experience some difficulty in expressing why he thinks the written version is 'a little bit different' from the BSL version and this seems to be because he is using a mixture of both languages at once. Because he has the written English in front of him he is perhaps prompted to respond using that structure but actually he does not have the spoken English skills necessary to continue to express his view clearly. Moving away from both of the languages to talk about them is probably a task that he has little experience of and so to use the language available to him to form his answer is an obvious strategy. The reason he gives for the difference in this instance is to do with the content of



the two phrases and he is able to see that this difference in detail is a minor one and that there is still some meaning equivalence between the two versions

***Jake's response***

R (highlights phrase in text)

J (reads highlighted text with some voice, although not intelligible, and lip patterns giving a sign for each word) MUMMY BIFF AND CHIP (hesitates)

R WANTED....

J WANTED FLOPPY T-O D-O THE .... (hesitates)

R SAME (recaps reading word for word gloss as Jake has done) MUMMY BIFF AND CHIP WANTED FLOPPY SAME

J (watches tape) no (shakes head)

R WHY

J BECAUSE....NOT SURE

R SAME WRITING OR DIFFERENT

J DIFFERENT

R WHY

J BECAUSE ...DIFFERENT PLACE

R LOOK AGAIN

J (re-reads English) NO NOTHING (watches tape) YES

Jake's main difficulty with the task is the reading through of the English phrase. He reads in an unsure manner requiring a lot of support and he seems to deal only with words in isolation so it is difficult to imagine that he has grasped the full meaning of the sequence of text. Because he reads the text through in this way he approaches the comparative task with a collection of signs which correspond to the English words rather than with a sense of the meaning of the whole phrase. His initial reaction to the task is to say that that there is no

match between the written English and the BSL. His second reaction is probably only a guess in response to the prompting by the researcher. His response suggests that he is not considering the equivalence of the meaning of the two clauses and this is not surprising as we cannot be sure what meaning from the English text he has brought to the task. His reason given for the difference between the two versions suggests that he is not yet able to compare the two languages at this level because of his difficulties with comprehension of English.

### ***Hannah's response***

R (highlights phrase in text)

H (reads text aloud - no signs - and watches tape)

{it says (refers to text) mummy, Biff and Chip wanted Floppy to  
{ SAY MUMMY AND BIFF AND CHIP WANTED FLOPPY T-O

{do the same  
{D-O THE SAME

R {yes did she (points to tape) sign the same as that (points to text)  
{ SHE SIGN SAME THAT

H {a little bit  
{LITTLE

R {why different  
{WHY DIFFERENT

H {she said (points tape) mummy wanted Floppy to do the same  
{SHE SAY MUMMY WANTED FLOPPY SAME

Hannah does not read the English sequence silently as Mark does but reads aloud. She does not mix the languages as Jake does and so avoids confusing herself about what signs she will be looking for. It is more likely that she is approaching the BSL part of the task with a grasp of the overall meaning she is looking for. Hannah's first attempt at explaining why the English and the BSL are slightly different is limited to reading from the text in the way that

Mark does but with prompting she is able to concisely point out the difference in the content of the BSL phrase by translating it into spoken English. Because this task centres on a simple difference in content Hannah is able to use the strategy of translating the BSL into English to compare the two versions but it may be that when the difference between the two versions becomes more subtle this strategy will not prove to be quite so effective.

**9.6.2 Group 2. (Nicola, Simon and Lucy)**

The written English phrase highlighted in the story is Mum had a good idea. The nearest BSL equivalent can be glossed as MUM THOUGHT OH ....WANT FLOPPY SAME. Neither of these sequences were areas of focus in the initial comparison activity. This BSL extract illustrates how interested mum is in what the two dogs are doing, how she thinks about it and then turns to Floppy hoping that he will do the same. The storyteller takes on the character of the mother and shows the interest on her face and the idea dawning that perhaps Floppy might like to play this game. The English is much more of a description of this process which is so clearly enacted in the BSL version. This task demands that the children recognise that the meaning of the written English corresponds with the BSL even though the storytelling perspective is different in that the mother is described in the English but the storyteller becomes the mother in the BSL.

*Nicolas's response*

R (highlights phrase in text)

N (reads text through with some lip patterns) *M-U-M* HAD A GOOD IDEA (watches tape then checks text) NOT-QUITE (marks text using symbol for a little bit different)

Nicola inserts an interim stage by reading the English using a sign from BSL for each word. By doing this she pre-emptes the signs which might be used in the BSL and so is in effect comparing a Sign Supported English version with a BSL version rather than comparing the

meaning of the written English with that of the BSL. It may be therefore, that this style of reading makes it more difficult for her to tackle the comparison task. Nicola does seem to accept that there is some similarity between the two versions which suggests a potential to analyse and compare the two versions in terms of the meaning as well as the form. Because of the need to move on through the task the researcher does not follow-up Nicola's response which may have provided further insight into her understanding.

*Simon's response*  
R (highlights phrase in text)  
S (reads text silently then summarises) mum had an idea (watches tape)  
    {no (shakes head) wants (points to different part of text)  
    {NOTHING       WANT  
R (points to highlighted text and asks) IDEA IDEA MUM (points to tape)  
S (shakes head)  
R (reviews section of tape)  
S (repeats signs as given on tape) MUM THOUGHT... {no idea  
  {NOTHING IDEA

Simon rehearses the text aloud before he looks at the BSL version which suggests that he may approach the task looking for a particular English structure. He is perturbed by the fact that WANT is not specified in the English as it is in the BSL and also that idea is not specified in the BSL. He seems to be tackling the task by looking for some direct structural equivalence between the two languages and by doing this he loses sight of the meaning expressed by both phrases. Simon is able to be quite analytical in that he can pick out these differences in such detail but his attention to this detail does not seem to enable him to consider whether or not the same ideas are being expressed in a different way.

### *Lucy's response*

R (highlights phrase in text)

L (looks at text) I-KNOW (watches tape then copies the BSL version)

R SAME SIGN (points tape) SAME (points text)

L no... bit different

R { what does she sign (points tape)  
{ SIGN WHAT HERS

L { she said mummy  
{ SHE SAID MUMMY THOUGHT... (as tape)

R { and you wrote..... (points text)  
{ YOU WROTE .....

L (looks at text and shakes head)

R { is it the same or different  
{ SAME OR DIFFERENT

L (shakes head and repeats sign phrases as tape then signs in English word order  
MUMMY HAVE GOOD IDEA it's different

Lucy demonstrates here that she is able to keep the two languages quite successfully apart.

She can read silently and repeat the BSL phrases without translating them into English.

Because she is able to do this we would expect her to be able to think in terms of the meanings of the two versions but her final answer indicates that she is comparing language form not meaning. It is possible that the researcher has influenced this approach to the comparison by her questioning which prompts Lucy to juxtapose the two versions and say whether they are the same or different. The researcher's question is ambiguous because she does not make it clear that she is asking for a comparison of meaning. This example highlights a problem with the task which needs to be taken into consideration in the conclusions drawn from this analysis.

9.7 Analysis of the children’s responses to comparison problem 2.

9.7.1 Group 1

The written English phrase highlighted in the story is are you ready Floppy? The nearest BSL equivalent in the video story is one BSL sign which can be glossed as STICK-SHAKE. In this case there is no structural similarity between the two phrases. They can only be described as similar if it is inferred that the action of shaking the stick in front of Floppy could be interpreted as asking him to be ready to fetch the stick. The difference between these two phrases will require the children to make inferences about actions described in the text and to be flexible in their approach to the search for equivalence. The children should be familiar with ways in which STICK-SHAKE can be interpreted because it was an area of focus in the initial comparison. It is therefore interesting to see if they can transfer this information to the reverse task.

*Mark's response*

R (highlights phrase in text)

M (reads text phrase silently then watches tape then checks back to text before responding)  
bit different (points to text)

R {a bit different why  
{BIT DIFFERENT WHY

M {because ..... mum didn't say are you ready  
{ SAY YOU READY

Mark reads the text silently and does not insert an interim stage before commenting on the match between the written English and the BSL. This suggests that he is confident with the meaning of the text as a whole. His answer shows that he is able to interpret the BSL version and recognise a possible equivalence between the two different versions in terms of the meaning that they convey. This demonstrates his ability to remain flexible and consider meaning as well as form. He uses the English of the text to supply the reason for the

difference as he does in the first task. This demonstrates again that although he prefers to answer in spoken English he does not have sufficient spoken skills to form an appropriate response.

*Jake's response*

R (highlights phrase in text)

J (re-reads the text providing a sign for each word) MUMMY SAID A-R-E YOU ...  
(hesitates)

R (glosses text) MUMMY SAID YOU READY FLOPPY

J (nods and watches tape) {no  
  {NO NOTHING

Jake's response to the task is very definite. This is perhaps because of the interim stage that he inserts by reading the text aloud in Sign Supported English with finger-spelling. Because he tackles the English in this way he is then looking for the signs he has generated in his SSE version rather than for a phrase which expresses the same meaning. This seems to make it more difficult for him to consider equivalence in terms of the meaning conveyed. Jake's approach to the activity seem to be more a process of matching the sign to English words as far as possible. It seems that Jake lacks confidence in two areas which are crucial for the completion of the task. The first of these is the comprehension of the English phrase as a whole and the second is the ability to analyse and interpret the BSL phrase. Jake is not yet able to stand back from the structure of the languages and think about meaning, perhaps because in this instance he is not reading for meaning. Instead he has to concentrate on decoding the English and comprehending the BSL.

### ***Hannah's response***

R (highlights phrase in text)

H (reads text aloud but with no sign support then watches tape)

{going  
{ STICK-SHAKE (signs as tape)

R { is that the same or a little bit the same  
{ STICK-SHAKE (as tape) SAME OR LITTLE SAME

H {little bit the same  
{LITTLE SAME

Hannah reads the text aloud and seems to comprehend the English as a whole. This enables her to look for equivalence in terms of meaning rather than form. She indicates that she knows that this section of the tape expresses the equivalent idea although she is not able to express how or why. In talking about it she does not translate the BSL back to spoken English but switches to BSL mid-sentence. Hannah demonstrates the ability to be flexible with language and accept that there may be very different ways of expressing similar meanings. In her response she uses the original BSL phrase which suggests that she is able to separate and switch between the two languages quite comfortably.

### **9.7.2 Group 2**

The written English phrases highlighted in the story is come on Floppy . The nearest BSL equivalent in the video story is one BSL sign which can be glossed as STICK-SHAKE. In this case therefore there is no structural similarity between the two phrases and they could only be described as similar if it can be inferred that the intention behind the action of shaking the stick in front of Floppy is to try to urge him to go after the stick. The difference between these two phrases will require the children to demonstrate the ability to make inferences and interpret meaning. The children should be familiar with ways in which



STICK-SHAKE can be interpreted because it was an area of focus in the initial comparison.

It is therefore interesting to see if they can transfer this information to the reverse task.

***Nicolas's response***

R (highlights phrase in text)

N (reads text giving a sign for each word) COME ON (decontextualised) FLOPPY  
(watches tape and shakes head)

R MUM STICK-SHAKE (as tape) COME-ON FLOPPY

N NO

Nicola inserts an interim stage in the task by putting single signs with the written words and so breaking up the meaning of the English phrase into three separate words or signs. It is not surprising therefore that she rejects the possibility of any similarity between the English and the BSL version as she has compared words with signs. In addition to this the researcher also influences a direct comparison of the form of the two versions by presenting both in BSL. This leads Nicola quite naturally to her negative response. Because of this negative response the researcher did not feel it was appropriate to pursue a more detailed explanation

***Simon's response***

R (highlights phrase in text)

S (reads text aloud with no additional sign then watches tape, shakes head and marks text using symbol for nothing the same)

Simon reads the text aloud and goes directly to the task which suggests that he is secure about the meaning of the English. It is however difficult to comment on the strategy he uses to respond to the task. We can speculate that because he has read the text aloud that this

influences his search of the BSL story and so he might therefore seek to find something structurally similar. This would lead him to respond negatively in this instance. Because of his negative response the researcher did not feel it was appropriate to pursue a more detailed explanation.

*Lucy's response*

R (highlights phrase in text)

L (reads text silently and then watches tape then shakes head)

{DIFFERENT ....THREW STICK-ONTO-WATER FLOPPY-TURN AWAY  
{different

R {did she say come on Floppy  
{ SAY COME-ON

L (shakes head and marks text with symbol meaning nothing the same)

Lucy reads silently and responds straight away thus avoiding any interim stage and demonstrating that she is confident about the meaning of both the written English and the BSL. In her answer she seems to be trying to say that the identified BSL phrase of STICK-SHAKE is different from the identified English of come on Floppy because it leads into something quite different in the BSL story which she then repeats. If this is her intended meaning she has made a sophisticated and accurate response as the BSL phrase of STICK-SHAKE is a way of getting Floppy's attention before the stick is thrown whereas the English come on Floppy is uttered in frustration after the stick has been thrown and Floppy has refused to co-operate. She answers correctly by contextualising the identified phrases. The researcher's question reinforces the differences between the two versions by setting up a search for a particular phrase. This once again highlights the need for careful consideration of the researcher's questions and the children's understanding of the tasks in the final conclusions.

### 9.8 Analysis of the children's responses to comparison problem 3.

### 9.8.1 Group 1

The written English phrase highlighted in the story is Floppy ignored her. The nearest BSL equivalent in the video story is one BSL sign which depicts the dog turning its head away from mum in disdain and disinterest which could be interpreted to mean FLOPPY-IGNORED-HER or translated more literally into the gloss FLOPPY-TURN-AWAY. This BSL phrase is much more descriptive of the way in which Floppy ignores mum than the conventional BSL sign IGNORE (which depicts not listening) with which all the children are familiar. This task will therefore require the children to recognise that there are alternative ways of expressing the same idea in BSL and to accept that even though there is not an exact match between the words and the signs for IGNORE, the same idea is expressed in both versions. The children should be familiar with ways in which TURN-AWAY can be interpreted because it was an area of focus in the initial comparison. It is therefore interesting to see if they can transfer this information to the reverse task.

### Mark's response

**R** (highlights phrase in text)

M (reads text silently and looks at tape)	{bit same {LITTLE SAME
---	---------------------------

R {a little bit the same ... why different do you think  
 {LITTLE SAME WHY DIFFERENT THINK

M {because Floppy said that's why  
 { FLOPPY SAID TURN-AWAY (as tape)

R {because hers (refers to tape) is and yours is .....  
 {BECAUSE HERS TURN-AWAY (as tape) YOURS .....  
 (points to text)

M (checks text)	{ignore {IGNORE (uses conventional sign)
-----------------	---

Mark reads the text silently and tackles the task straight away which suggests that he is fully confident to look for the equivalent of the English text. His answer demonstrates that he is able to consider the different ways in which the same meaning can be expressed as he compares the two versions by repeating the BSL version exactly but using the conventional sign for ignore to represent the English version. It is interesting to note that to do this comparison Mark is able to juxtapose two different BSL utterances. By doing this he has in one sense gone beyond the task of recognising the equivalent expression of the same meaning in both languages to analysing how this idea can be expressed differently in one language.

*Jake's response*

R (highlights phrase in text)

J (reads text using lip patterns and some voice)

{ Floppy (hesitates)  
{ IGNORED (conventional sign)

R HER

J HER (watches tape) IGNORE (conventional sign) YES

Jake's approach to the task is once again hampered by his lack of confidence with the English text although he does know and recognise the English word ignore and provides the conventional BSL sign for it himself. This shorter phrase, containing a key English word that he understands and knows an equivalent for in BSL, gives him more of a chance to compare the two versions directly and respond. When the text is thus within his grasp he clearly is able to reflect on the BSL version and make an accurate judgement about the presence of an equivalent phrase. In this instance Jake does not focus just on the difference in terms of the form of the two phrase but successfully compares the meaning of the written



focus in the initial comparison. It is therefore interesting to see if they can transfer this information to the reverse task.

***Nicola's response***

R (highlights text)

N (reads text) FLOPPY IGNORED (uses conventional sign for ignored not sign used in video BSL story)

MUM I-KNOW (watches tape) YES (marks text using symbol for the same)

Nicola uses the conventional sign for IGNORE in her signed interpretation of the text but is able to accept that the BSL version contains the same meaning although it is expressed differently. The straightforward nature of this piece of comparison makes it possible to identify that the children are able to succeed when they are confident with the meaning of the English text and when they are confident enough with the BSL version to be able to infer the intention behind the character's actions.

***Simon's response***

R (highlights text and reads aloud)

S (nods)

R (asks) you think it's there (refers to tape)

S (reads) Floppy ignored mum (then watches tape)

{ Floppy ignored (looks at researcher)

{ IGNORE (uses conventional sign for ignore not as tape)

R have you seen it

S (nods)

R is it there (refers to tape)

S (nods)

R (asks) { same  
              { SAME

S (looks at text and nods)

This is another good example of how the children's flexibility within one language enables them to succeed. Simon, like Nicola, knows the conventional BSL sign for IGNORE but is able to analyse the BSL version and recognise that the same meaning is conveyed although the way in which IGNORE is specified is slightly different.

### *Lucy's response*

R (highlights text)

L (reads text silently then turns to tape and says to herself aloud) Floppy ignored mum  
(watches tape and repeats sign version)

{ different  
{ DIFFERENT

R (reads text with signs word for word) FLOPPY IGNORED MUM (points to text)  
(asks) HAVE THERE (points tape)

L NO DIFFERENT

R (asks) WHY DIFFERENT

L (signs as tape) FLOPPY IGNORED MUM CROSS

Lucy is quite confident in her conviction that the two version are not an exact match in terms of the meaning expressed. Once again she contextualises the BSL by continuing the story which suggests that she is not comfortable comparing isolated phrases. She also reads the English version aloud which perhaps influences her search for an equivalent BSL expression if the same idea by focusing her on the English structure.

### 9.9 Analysis of the children's responses to comparison problem 4.

The written English phrase highlighted in the story is the wind blew her hat off and it went into the water. The nearest BSL equivalent depicts the hat being blown off Biff's head and landing on the water and could be glossed as HAT-BLEW-OFF ONTO-WATER. Neither of these sequences were areas of focus in the initial comparison activity. The English text provides a full description of what happened by stating that it was the wind that blew the hat off, whereas the BSL sequence illustrates very visually the hat being blown off the head without the wind being specified. This task requires the children to accept that the same idea can be expressed even though the details of the event are differently specified in both languages. The central difference between the two sequences is the perspective they present of the same event. The written English describes the whole event from the viewer's perspective whereas in the BSL version the storyteller becomes the hat wearer to illustrate how the hat leaves the head and sails onto the lake.

**R** (highlights phrase in text)

R {why different  
{WHY DIFFERENT

Mark's approach to the text and the task indicates that he fully understands both the English text and the BSL version. His response suggests that he is looking for a match between the content of both phrases. Because the content of the phrases are not exactly the same he decides that the phrases are a little bit different. that he is able to articulate the reason



behind his decisions suggests that he has a very clear understanding of the task and can make quite detailed comparisons between the two languages. His approach to the task does seem to suggest that the dominance of the English version in his mind prevents him from seeing that the exact same idea is expressed even though WIND is not specified in the BSL. Nevertheless this perception of the difference demonstrates some analytical ability and certainly suggest the potential for further discussion about the different ways in which BSL and English can explore the same idea.

### ***Jake's response***

R (highlights phrase in text)

J (starts to read text but needs a sign given by the researcher for every word then watches tape) no

R (asks) DIFFERENT WHY DIFFERENT

J (looks at text) DIFFERENT HOW (puzzled but marks the text with the symbol meaning nothing the same)

Jake's response indicates again that the task is not at an appropriate level for him to respond meaningfully. He is not able to read the English text independently and it is therefore unlikely that his word by word representation of the text in signs (gloss) will provide him with a sense of the overall meaning. It is therefore not surprising that he concludes the BSL version to be different as his representation of the written English, probably does not enable him to purposefully direct his search of the BSL. Jake demonstrates difficulty in reading the English for meaning and his behaviour indicates that he does not know what to look for. Because of this the researcher does not pursue the task.

### ***Hannah's response***

R (highlights phrase in text)

H (reads text aloud without accompanying signs and watches tape) no

R {why  
{WHY

H {because said (refers to tape) the hat blew on the water  
{ SAY HAT-BLEW-OFF ONTO-WATER (as tape)

R and what is yours (points to text)

H no it's different

R {why is it different  
{WHY DIFFERENT

H { because mine (reads) the wind blew her hat off  
{ MINE (signs word for word) THE WIND BLEW HER HAT OFF  
  
{and it went into the water  
{AND I-T WENT IN WATER

Hannah's response indicates that she is confident with the English text and with the BSL version. Like Mark, she too is concerned with the difference in the exact content of the BSL but her answer is more definite as she rejects any similarity between the two versions because of this discrepancy. Hannah seems to be disadvantaged by translating the BSL into English which, although she is accurate, sets up a comparison of two English phrases and so changes the nature of the task. This response demonstrates her versatility with the two languages but her lack of experience of making comparisons in this way.

### **9.9.2 Group 2**

The written English phrase highlighted in the story is Floppy ran very fast into the water.

The BSL equivalent in the video story is depicted by the storyteller becoming the dog and shows how he suddenly becomes alert, bounds towards the water then swims to the hat.

The BSL equivalent could be glossed as FLOPPY LOOK RUN SWIM. Neither of these

phrases were areas of focus in the initial comparison activity. The difference between the two versions is that the BSL represents actions rather than recounts them and this is a consistent difference between BSL and English. In the BSL version facial expression, hand movements and the added detail of the flapping ears show that Floppy is running at top speed but the adverb FAST is not actually used. Instead the adverb is incorporated into the manner of articulation of the sign. This task requires the children to make these inferences themselves and to recognise that the same idea is expressed in both phrases although FAST is specified in different ways.

***Nicola's response***

R (highlights text)

N (reads the text giving a sign for each word and using the sign RAN out of context - not correct sign for an animal running) RAN VERY FAST IN T-O- T-H-E WATER (watches tape and shakes head) No (marks text with symbol meaning nothing the same)

Nicola breaks up the meaning of the English by reading with a sign for each word and using the sign for RAN out of context. It is probably then harder for her to consider a comparison of what each phrases conveys as we cannot be sure what she has gained from her reading of the English text in this way. The way in which all the children read the identified English is a key factor in their performance of these tasks which needs to be addressed in the conclusions.

***Simon's response***

R (highlights text and starts to read) Floppy ran

S (continues) very fast

R very fast into the water

S (watches tape) nothing in (looks back to text) nothing very fast

R (repeats BSL sign from tape showing Floppy running)

S nothing ( looks back to text and points to Floppy ran ) that (nods then points to very fast into the water ) nothing nothing

Simon is quite analytical in his response but focuses on the detail of individual signs and words. This does not enable him consider whether or not the phrases actually convey the same idea. He does not infer from the BSL version that Floppy is running very fast. His response indicates that he would benefit from more experience of discussing and analysing one language and how different meanings can be expressed before looking at two languages side by side in this way. Simon is not prompted any further because he does not identify any relevant aspect of the text.

### *Lucy's response*

R (highlights text)

L (reads text giving a sign for each word with voice not as tape using citation from of sign for (HUMAN) RAN)

{FLOPPY RAN V FAST IN T-O T-H-E WATER

{Floppy ran very fast in to the water

(watches tape and copies the relevant section exactly as the BSL ) different

R WHY

L { SHE SAY (refers tape) FLOPPY SAT-UP (as tape) NOTHING VERY FAST  
{ very fast

R BUT RAN-FAST (repeats as tape) THAT LOOK FAST

L { YES.....NO SAY SAT-UP (as tape).....RAN (as tape) LIP-PATTERN NOTHING  
{ Oh ran didn't say ran

Lucy is also analytical about the detail of the English and the BSL which leads her to respond that the phrases are different. She argues that the two versions are different because of the added detail in the BSL showing Floppy becoming interested and the fact that VERY

FAST is not specified in the BSL in the same way as it is in the English. Lucy is prompted because she indicates that she can see some relationship between the English and the BSL. When Lucy is pushed for more reasons she comments that the lip pattern for RAN is not present in the BSL version. This is accurate because the BSL story teller becomes, rather than describes, the dog running. Lucy is clearly quite confident with the content of both versions and is able to discuss the difference between both languages. Her response that the two versions are different is perhaps more a reflection of her understanding of the task and of what counts as the same or different in this context, rather than of her ability to tackle this type of analysis task.

## **9.10 Discussion**

### **9.10.1 Differences between the individual children**

This section of the analysis further illuminates the individual differences between the children's developing sign bilingualism and how each child uses their languages to tackle the task and to talk about their responses. There is evidence that all of the children are able to some extent to use one of their languages to reflect upon and talk about the other. What also emerges is to what extent they are able to consider meaning equivalents and what their perception of a significant difference might be. These findings suggest that a broad repertoire of skills in both languages is needed order to be able to consider similarities and differences in meaning as well as in form. The children who seem to demonstrate strengths only in one particular language are less able to work at this level because of their inability to understand and interpret both the source and the comparison material. This is illustrated in the discussion of the individuals below.

Mark read silently each time and tackled the tasks without 're-coding' either the English or the BSL into SSE thus demonstrating a good level of comprehension of both versions. His

responses were English-dominant but he possessed limited expressive skills to talk about his answers and he was at times very strongly influenced by the English structure used in the text. Mark was able to distinguish between significant differences which affect the match between the versions in terms of meaning and minor differences that did not. He also demonstrated the ability to analyse both languages and interpret literal meaning.

Jake struggled in his comprehension of the English text. He read word for word using SSE and was dependent on the adult for cues. He therefore did not approach the BSL version with a secure sense of the meaning of the text. Jake's reading style and mismatch of the task to his ability level seemed to make reflecting on the meaning more difficult for him. He did demonstrate, however, that when the English and the BSL used were comfortably part of his repertoire he could respond appropriately and recognise that there was more than one way of saying the same thing.

Hannah read aloud without SSE, like Mark, and so avoided mixing languages. She demonstrated the ability to recognise when the overall sense of the two versions was the same despite differences in form and minor differences in content. When Hannah did mix the two languages, by translating the BSL into SSE, this seemed to inhibit her ability to recognise that there was a meaning equivalent.

Nicola read using SSE but was able to appreciate equivalence between the two versions when not too much interpretation was needed. She rejected equivalence where it was necessary to interpret meaning and where the complexity of the English and the BSL necessitated consideration of meaning rather than form.

Simon read aloud, on one occasion using SSE but otherwise with no other sign support. He only accepted equivalence between the two versions once, when he was able to analyse the BSL phrase used and recognise another way of signing it which matched a way of expressing it in the written form. Simon was usually more concerned with the difference in form between the two versions

Lucy usually read silently and seemed able to successfully keep the two languages separate. Lucy's understanding of how each version holds together lead her to contextualise each phrase identified for analysis and so her answers reflected whether or not each identified phrases could come from the same place in the story. This raises questions about using a connected text for this task rather than isolated English and BSL sequences. The use of a story sequence made the task more meaningful and natural but prevented this particular learner from analysing the two sequences linguistically. Where Lucy read in SSE, she was drawn into a comparison of the structure of both versions and lost sight of the main ideas expressed.

### **9.10.2 General issues**

As discussed in Chapter 8, the nature of the task may not have been totally clear for the learners. Although they comprehended the concepts of 'same' and 'different' we cannot be sure what they understood by 'mean' and these were the words used by the researcher to explain the task. Despite the ambiguity and the unfamiliarity of the task the children demonstrated the potential to consider the two languages as separate entities and made some judgements about what both languages could express in a given context.

The role of the researcher is bound to have a very significant effect on the children's responses to the task. In some cases the researcher's prompting accounted for inflexible

responses from the children and the fact that the researcher is hearing may also have accounted for the children attempting to give explanations for their responses in English.

It is interesting to note that the children did not seem to find the comparison tasks any easier where the same linguistic material was used as in the initial comparison work. They did not seem to demonstrate any recognition that they had come across the phrases before, although in the reverse situation. This may be simply explained by the time gap between the two activities (approximately 2 months). Alternatively it may be because although the linguistic material used was the same the children had to go through a very different process for the two activities. The first activity involved analysing the meaning of the BSL which was given as the source phrase and the second involved analysing the meaning of the written English which was given as the source phrase. Therefore, although they may have been familiar with a particular BSL phrase when they met this again in the second task they had to re-analyse it as if for the first time.

Working from the English first to the BSL caused some of the children to insert an interim stage by reading the English using word for word signs from BSL. Where children did this it sometimes caused them to focus more of the form than the meaning of the phrases as they had already introduced some signs of their own in the initial reading and these signs did not necessarily match those used in the BSL phrase.

How the individual children read gave an indication of their level of comprehension and of their understanding of the separateness of the two languages. Where they were able to read without sign support they seemed better equipped to tackle the task appropriately and work from English meaning to BSL meaning. This points to a need for the use of SSE in the educational context to be carefully evaluated. The less confident reader needs to be



supported to search for gist and not to only focus on each separate word as this proved to be counter-productive in terms of overall comprehension

The children had to be able to understand the main idea expressed in the English version but also be able to analyse and interpret the BSL in order to complete some of the questions. Where they knew other ways of saying the same thing in BSL they were more successful. This suggests that analytical work of this nature with one language at a time would benefit their translation skills

### **9.11 Conclusion**

There was no marked discrepancy between the performance of the individual children in the first set of tasks, where they were asked to look for the equivalent of a targeted BSL phrase in the English text, and their performance in this second set of tasks. The strengths and weaknesses they demonstrated seemed either to help or hinder them in both cases.

Strategies which enabled the children to tackle the tasks more successfully included:

- silent appraisal of either the English or the BSL source material with no interim stage added,
- the ability to analyse and interpret the meaning of either the English or the BSL.

Strategies which caused the children problems in responding accurately to the task included:

- re-coding either the targeted BSL or the English and so inserting an interim stage in the process (SSE),
- focusing on the match in terms of formal similarities between particular words and signs rather than on a match in terms of meaning.

One of the most significant issues to emerge from the comparison work is that the 'interim stage', which some of the children deployed, provides a view into the child's attempts to move between the two languages. In the context of comparative analysis work the interim stage was not always helpful for the successful completion of the task in comparison to the translation activity where the interim stage often represented the outcome of the task. The combined findings from the translation, non-translation and the comparison task are discussed in the conclusion to this study. These findings taken together do enable us to piece together a more comprehensive picture of each child's sign bilingualism but also lead us to some more general conclusions about the dimensions of sign bilingual language proficiency, metalinguistic abilities and implications for literacy development.

### 10.1 Introduction

The overall goal of this study was to contribute to our developing understanding of sign bilingualism through an investigation into deaf children's metalinguistic abilities. This chapter discusses the general conclusions related to the research approach and outcomes in the context of the original research questions and the theoretical and pedagogical implications of the findings.

The conclusions have direct relevance for practitioners working with sign bilingual deaf children and for future educational and linguistic research in this area. Within these conclusions, which have relevance for other sign bilingual children, one area of focus is children's developing sign bilingualism. This study has led to findings regarding broader dimensions of sign bilingualism than have hitherto been researched, particularly concerning individual language awareness and use.

The second strand within the general conclusions relates to the distinction between linguistic and metalinguistic skills. This study has sought to identify the extent to which sign bilingual deaf children demonstrate metalinguistic abilities and to define the notion of metalinguistic ability specifically within the sign bilingual context. The findings lead to conclusions regarding the extent to which the concept of metalinguistic proficiency is a useful vehicle for the development of research methodology and educational practice in this area. This investigation has also enabled a proposed model of literacy development, which places metalinguistic abilities centrally, to be addressed. This discussion provides pointers for practitioners as well as specific directions for future research. Particular attention is also

given to the potential of the original research methodology developed through this study and to the opportunities presented, as a result of the outcomes of the study, for the continued exploration of this little understood area.

In order to present a full discussion of these areas, specific conclusions related to the individual children are discussed first. Because of the exploratory nature of this research it is considered that the language profiles of the individual children, which have emerged from the empirical work, provide original data about sign bilingualism which directly supports the general conclusions.

## **10.2 Specific conclusions related to individuals**

One of the questions posed by the study was what is the meaning of bilingual when we refer to deaf children's language skills and experiences? It has been argued that sign bilingual children are different from children who are bilingual in two spoken languages because they are learning to manipulate two languages but three modalities (spoken, signed, written).

This study has argued that because of this, deaf children's language skills, dominances and learning strategies cannot be fully described in the context of spoken language bilingualism. A fuller understanding is needed of bilingualism with regard to these children's use of the two languages of sign language and English, across two different modalities. One outcome of this study has therefore been be a redefining of the notion of sign bilingualism informed by the detailed study of six individual approaches to language learning.

Over the period of an academic year the children participated in 4 elicitation activities, each of which had four tasks. This enabled some patterns to be identified in terms of the children's language use and their approaches to the tasks. It is acknowledged that

interpretations of the patterns emerging are speculative given the difficulties of fully explaining any human behaviour and the issues associated with developing a new methodology which will be discussed later in this chapter. Some of the issues arising are intrinsic to this type of research analysis such as whether the differences between the individual children reflect their understanding of the task or their level of language proficiency and whether the interim stages described reflect their learning experiences or anticipated expectations of the task. Nevertheless, the rich data gained from the elicitation activities does enable us to describe the heterogeneity of sign bilingualism in terms which have not hitherto been discussed or explained in the literature.

The discussion about each child focuses on their responses to the comparison and translation work and what this suggests about their individual sign bilingualism. Each discussion concludes by considering the relationship between what has been observed about each child's language skills and use and what the adults involved with each child and the children themselves said about their language skills and preferences. Although a brief profile of each child has been presented in Chapter 5, the more detailed profiles are in Appendix 1. The adults and children's views were purposefully not included in the child profiles in Chapter 5 as it was the intention of the study to create an overall picture of each child's language use rather than to start from a fixed position regarding each child's preferred language. Where the adult and children's views are referred to in this chapter all quotations are translations from the interviews.

### *Hannah*

In the analysis of the comparison tasks, where BSL was the source language, it was noted that Hannah did not generally insert an interim stage and was therefore able to focus on a search for equivalent meanings. When English was the source language she read aloud and

occasionally searched for a BSL gloss of the English she had just read rather than the equivalent meaning expressed in BSL. In her translation work she used spoken English to interpret the BSL and prepare her English text. This enabled her to tackle idiomatic BSL phrases and present an English alternative. This allowed her to write fluently and independently. Her written translation from BSL and written text from the picture source had very similar characteristics and the translation text presented little evidence of being influenced by the BSL source. Hannah was considered to have demonstrated metalinguistic awareness through her approach to these tasks.

Hannah's comparison work suggested that she was confident with the meaning of the BSL and the written English but that the boundaries between the two languages are sometimes blurred when she is working closely between them. Her use of spoken English in her translation and non-translation writing suggested that English is her stronger language. This is consistent with the deaf and hearing adults' views that she is able to use BSL and SSE equally well but her use of English is more dominant. This balance was also reflected in Hannah's own stated language preference which was translated as 'all....sign and voice'. Hannah paused after stating 'all' and then qualified this by stating the two modes through which she likes to communicate.

### *Jake*

In the comparison work (BSL source), Jake inserted a BSL interim stage before searching the English and he contextualised the BSL. When English was the source he struggled to read for meaning and therefore to engage successfully with the activity. In his translation work he generally wrote down a gloss of the BSL and tried to add English features but could not participate as more complex English was needed. In his non-translation writing he continued with the strategy of writing down the BSL although this time the BSL was his

own interpretation of the pictures and not imposed by the source story. Jake was considered to have demonstrated some awareness of the differences between the two languages where he was fully able to access the language of the tasks.

Jake's comparison work suggested a certain lack of confidence with the BSL source as he needed to revise it before looking over the written English but he could then attempt the task. Where written English was presented first he lacked the linguistic skills to participate meaningfully. His translation and comparison work suggested that BSL is Jake's stronger language. This is consistent with the deaf and hearing adults reports that BSL is his most fluent language and proficient means of accessing and conveying information and that he experiences frequent frustration with spoken and written English. Jake's own stated language preference when interviewed translated as 'sign best'.

### *Mark*

In the comparison and the translation work Mark seemed able to focus on a search for equivalent meanings whatever the source language. He worked silently between the two languages and demonstrated an acceptance of equivalent meanings where the structures were very different. His non-translation writing had very similar characteristics to his translation writing and we might therefore conclude that his translation was not influenced by the BSL source. Mark was considered to have demonstrated considerable metalinguistic awareness in his approach and response to these activities.

Mark comparison work suggested that he was confident with the meanings of both versions of the story and that he was able to remember the contents of each version of the story since he answered without checking. It is interesting that despite his confident responses he found it difficult to express reasons for his answers. We might conclude that he has strong spoken

English skills although he does not currently choose to use spoken language. Mark's bridge between BSL and written English may well therefore still be spoken English although this process is not as transparent as it is for Hannah and Simon. Given Mark's moderate hearing loss and evident English skills, BSL seemed to be a chosen part of his language repertoire for other reasons than linguistic (perhaps emotional or social). This is reflected in the adults' report that he has an equal level of skills in BSL and SSE but is reluctant to use spoken English and prefers to use and to access information through BSL. Mark's language profile is still considered to be important to the study as a whole since he operates in two languages on a daily basis. The reason for his choosing to do this is currently not understood by the professionals involved but the continued support through sign language is considered to be important for his continued educational progress and social development. This ambiguity came through in the child's own uncertain statement of his preferred language mode in interview which translated as 'signing...no...voice.'

### *Lucy*

In the comparison work (BSL source) Lucy was usually able to focus on a search for same meaning even though she inserted a spoken translation (with BSL gloss) before searching the text. When English was the source she analysed and contextualised the target phrase before searching for the equivalent meaning. In her translation she seemed to write down a gloss of the BSL and then add English features but had difficulties where the English demands became more complex. It is interesting that both of her written texts seemed to be influenced by the source for writing, the BSL story and the English context of the pictures respectively. It was considered that Lucy's strategies suggest some metalinguistic awareness as she generally focused on equivalence of meaning rather than of form in the comparison work.



Lucy's comparison work suggested that she needed to secure the meaning of the BSL (through spoken translation) and the English (through contextualisation) before she moved into a search for equivalent meanings. In her translation work she was able to rely on her spoken language skills to provide a bridge from the BSL to the written English and yet the comparison of her translation and non-translation texts suggested that her writing was influenced by the BSL source. Identifying Lucy's stronger language is not straightforward. The adults reported that she is able to receive and express complex information more efficiently in BSL but is always willing to attempt English and that she frequently mixes SSE with BSL. Lucy's own statement when interviewed of 'signing and talking a little bit' also reflects this mixed repertoire of skills.

### *Nicola*

In the comparison work (BSL source) Nicola contextualised the BSL phrase before searching the English text. When English was the source, she read aloud using SSE and could recognise equivalence of meaning where the language forms were similar and no inference was needed. In her translation work she generally wrote down a gloss of the BSL and then added English features but she met with difficulties as the English demands became more complex. Nicola's translation was strongly influenced by the BSL source and the non-translation text was influenced by the English context of the picture sequence. It was considered that Nicola has demonstrated some metalinguistic awareness where she was fully able to access the language of the task.

Nicola's comparison work suggested a lack of confidence with the meaning of both the BSL and the English source as she engaged strategies to secure the meaning before she moved on. Her translation approach suggested that BSL is her stronger language although she is also susceptible to the influences of the English she is familiar with in the non-

translation activity. The adults reported about Nicola that her preferred language is BSL and Nicola herself commented when interviewed that her preferred language is:

‘Signing....signing is easy, speaking is difficult’.

### *Simon*

In the comparison work Simon generally searched for equivalence in terms of form rather than meaning. When BSL was the source he inserted a spoken translation with some BSL signs before searching the text. When English was the source he read aloud before searching the tape. In his translation work he used spoken English to prepare his writing although there was evidence of influence from BSL in his writing when compared to the non-translation text. Simon’s understanding of the differences between the two languages was considered to be evidence of some metalinguistic awareness although his attention to form rather than meaning suggested that this was not well developed.

Simon’s comparison work suggested that he was more comfortable starting from his spoken English interpretation whatever the source. His spoken English skills did not necessarily help him to focus on meaning but provided him with an approach to the task. His spoken English skills did support his translation work. Because spoken English dominated in these activities we might expect this to be his stronger language. The adults reported that Simon most efficiently accesses curriculum and communicates with peers and adults through BSL but that his English strengths are beginning to emerge. Simon’s own stated preference when interviewed was ‘speaking with sign’. We could argue that he has more potential in English than is currently recognised or that currently he needs to continue to move between the two languages depending on the demands of the activity.

### **10. 3 Individual sign bilingualism**

The most important point emerging from these individual profiles is the range and variation evident between the children in terms of their sign bilingual skills. The review of the literature found that very little research has explored the characteristics of sign bilingualism or sign bilingual language development in any depth. Because of this, we lack knowledge about these children's comparative levels of skills in both of their languages. This study has identified several common features of sign bilingualism which existed among all of the children as well as individual features. One of the common features was that all of the children were able to use one of their languages to reflect upon and talk about the other. They all demonstrated the ability to make comparisons between the two languages either in terms of form or meaning which suggested that they were all aware of the separate nature of their two languages. All of the children were adept at moving between their two languages although they each deployed different strategies for doing this. In the context of this study the children had to move between their two languages for the specific activities but this more formal situation reflected their daily experience of being bilingual. The children all also mixed or combined their two languages to solve particular communicative problems either through the use of SSE or in their writing. Very distinct language separation seemed to reflect less ability in one or both languages not more, as in the case of Jake.

All of the children in this study can be described as sign bilingual and yet as individuals they demonstrated different strengths and weaknesses in both of their languages. This sometimes related directly to their spoken English skills, but as we have seen in Mark, a child's potential for spoken English development was not always reflected in their current language

choices. Nevertheless this area of linguistic ability has several implications for the children's individual approaches to written English.

Another area of skill which distinguished the children was their ability to analyse BSL and written English and to make inferences about the meaning of a particular phrase. This ability did not seem to relate to spoken language skills but to a deeper understanding of the language which required skills beyond the production of a sign or written/spoken word. The children also differed in the extent to which they perceived and used English and BSL as separate languages. Neither of these areas of language ability are usually referred to in discussions of deaf children's sign bilingualism and yet they provided useful information about the interaction between the child's two languages which would complement statements regarding attainment in both languages.

A final issue which is usually used to illustrate sign bilingualism is the notion of a preferred language. Identification of each child's preferred language was not straightforward. The deaf and hearing adults interviewed in this study had views on this but these views were not based on formal assessments but on how the children coped in certain situations. We do not know if the children had been given the opportunity to manage in different circumstances and so to what extent the adults' views were restricted by limited evidence of the children's linguistic abilities. When the children themselves were asked, not all of them were able to indicate a clear preference for one or other language. Being able to move between the two languages perhaps provided them with greatest flexibility socially and academically at this point in their school lives.

Because there is as yet no way of measuring deaf children's developing skills in BSL and English which provides an indication of the comparative proficiency in both languages, this

study has necessarily described certain features and individual differences. However, this diversity of findings points to a need for the development of a comprehensive language profile for sign bilingual deaf children which reflects these individual differences. A point to be discussed later in relation to this is whether aspects of the activities used in this study might be used to provide information which would contribute to such a profile.

#### **10. 4 Individual sign bilingualism and bilingual theory**

This study has been designed and undertaken without assumptions first being made about similarities between spoken and sign bilingualism. However, the direct conclusions from the study can now be used to discuss whether or not the deaf child does have unique bilingual development and characteristics distinct from their hearing counterparts.

##### **10.4.1 Definitions of bilingualism**

The outcomes of this study suggest that although a complete parallel between sign and spoken bilingualism cannot be drawn, deaf individuals fit the general description of bilingual and share many similarities with spoken bilinguals. Deaf bilinguals as hearing bilinguals have access to more than one linguistic code as a means of social communication although the degree of access varies (Hamers and Blanc, 1999). This study has demonstrated that different bilingual configurations exert unique influences and this is true of all bilinguals. Deaf bilinguals are also members of a minority group of deaf people who use sign language. This has important implications for their bilingual development since a bilingual individual's development of both languages is affected by their social and cognitive experience with the two languages.

#### **10.4.2 Routes to bilingualism**

One factor which makes the deaf child's bilingual development different is the circumstances in which they become bilingual, that is their access to both languages. Most deaf children, notably those of hearing parents, begin to learn sign language outside the home beyond the age at which first language acquisition usually takes place (Mayberry and Fischer, 1989). Given this potentially impoverished language learning situation we would not necessarily expect deaf children to experience the cognitive advantages, in terms of language awareness, normally associated with bilingual language development and yet the individuals in this study do demonstrate varying degrees of awareness of language functions.

#### **10.4.3 Bilingual curriculum delivery**

To explain this we might usefully look to their social and cognitive experience with the two languages as suggested above by Hamers and Blanc. When deaf children do join a bilingual educational environment, albeit later than we would consider desirable for most, they are not immersed in the target language of English but continue to learn through both languages. Children in mainstream settings particularly have the opportunity to experience the curriculum being delivered in both English and sign language at once because access to the spoken English is not taken for granted. This points to a further crucial difference between deaf and hearing bilingual children. Deaf children do not have full access to the spoken language of the educational setting and while this has implications for their overall bilingual and particularly literacy development, it imposes a dual language learning situation where sign language is used closely alongside spoken and written English in the school setting. Future research of this nature with hearing sign bilingual children would be useful to further investigate this access issue.

#### 10.4.4 Code mixing

Throughout the empirical work in this study it was evident that deaf children, like other bilinguals, constantly mix and switch languages. In a discussion of parallels with spoken language bilingualism it is the code mixing evident in deaf children's language and sign bilingual situations in general which is of interest. This is because it is proposed at the start of the study that the type of code mixing that deaf children engage in and are exposed to is unique because of the two different modalities in which it occurs. It is accepted that a mixed code is characteristic of all bilinguals communicating with other bilinguals. Where this occurs between two spoken languages the speaker may borrow words or short expressions from one language and use them within an utterance in their other language. Usually the words or phrases borrowed are adapted morphologically and sometimes phonologically to fit in with the 'host' language (Grosjean, 1996). The important distinction to be made between this type of mixing and that evident in deaf children's language is that a borrowed word or phrase is used as a replacement, whereas sign language and spoken English can be mixed by presenting simultaneously. For example a deaf person signing to a hearing person might augment the role of the mouth and lip-patterns, adopt a more English-like word/sign order and use less BSL-related and more English-related non-manual information. This type of mixing between spoken and sign language is referred to as contact signing and it is the result of on-going contact between the two languages (Turner, 1994).

Although this distinction can be made between spoken and sign bilingual code mixing it is evident that this type of language use fulfils an important sociolinguistic function in both cases regardless of the modality issue in that it meets specific communicative needs. Being able to mix languages in this way also provides the children in this study with a means to move between languages, solve complex language problems and communicate their ideas

successfully. The benefits of code-mixing in these two different bilingual situations are therefore also accepted as parallel. Where code-mixing is used by the children then we can assume it is part of their natural bilingual development and reflects the normal repertoire of bilingual skills at different stages of development.

The crucial difference relates to the implications of this mixing between modalities for deaf children's English literacy development. Because deaf children do not have full access to the spoken form of English, the development of English literacy skills is complex as discussed fully in Chapter 3. What has become apparent from the analysis of the children's approaches to writing in this study is that writing down an English gloss of BSL is a common writing strategy for the children without strong spoken language skills. The gloss, in this case, is derived from the children's own language mixing. Unlike hearing bilingual children, deaf children will not be able to develop a representation of English through constant access to its spoken form. The concern then is how to move them beyond this language mixing stage in their writing.

#### **10.4.5 Language separation**

This study was based on the premise, drawn from spoken bilingualism, that deaf children need to see their two languages as separate. It is evident from the above discussion that code mixing naturally occurs in educational settings and this needs to be recognised as a natural part of the children's repertoire. However, this does not justify its use as a medium of instruction and yet for many hearing teachers it is a natural concomitant of working with the two languages. This was particularly evident in the pilot studies where teacher's language use was observed and in the dialogue between the researcher and the children in the comparison work. Language mixing by hearing adults particularly can be naturally



occurring, as in these examples, or contrived where Sign Supported English is consciously adopted as the means of curriculum delivery.

The findings from this study suggest that language separation is impossible but that steps can be taken to ensure the children are not disadvantaged by the code-mixing of the adults. Children should be made aware that code-mixing naturally occurs and shown how this is different from the use of one or other language separately. Where SSE is used should be clearly defined particularly where it is used in relation to written English, either to read English or to prepare writing activities so that the children are not driven towards a false understanding of the relationship between BSL and English. Given the language awareness demonstrated by the children in this study it should be possible to make explicit to them the rich texture of the communication which takes place where BSL and English are used closely together.

#### **10.4.6 Experience of writing in sign language**

The above discussion of the problems of writing in English without a clear model of its spoken form raises a related question about the experience of writing and writing conventions. This study has explored one aspect of deaf children's writing process, notably moving from sign language to text. Moving between modalities is one problem to be explored but moving between spoken language conventions and written language conventions is also worthy of consideration. Because deaf children do not generally experience literacy in sign language they are not prepared from the characteristics of written language which distinguish it from spoken or sign languages defined as 'W-languages' and 'S-languages' respectively by Ahlgren (1992). These contrasting characteristics exemplified by Ahlgren include the segmented nature of 'W-languages', their stability, invariance,

conservatism and linear structure. The findings from this study raise the question of whether the introduction of signwriting (discussed in the Introduction) into these children's literacy programme might provide an opportunity to meet these characteristics in the language whose primary form they are able to fully access (Sutton, 1998; Gangel-Vasquez, 1998).

### **10.5 Metalinguistic skills**

Two related research questions addressed in this study were: what constitutes metalinguistic ability in bilingual deaf children and can this ability support their development of literacy skills? The hypothesis that metalinguistic abilities might support English literacy development was drawn from the claims in the literature that the development of metalinguistic abilities, that is knowledge about language in contrast to an ability to use language, can provide a route to literacy development which does not rely on spoken language skills. The study has argued that if we are to promote metalinguistic understanding as a transferable skill which can support deaf children's literacy development, we need to understand the nature of these abilities and how they are manifested in the sign bilingual context. Emphasis is placed on the notion of 'transferable' as it was hypothesised that metalinguistic understanding is not restricted to one or other language but can be described as 'translinguistic' in that the knowledge and skills can be applied across both languages. A further question which emerged from the review of the literature related to the notion that metalinguistic ability is an extension of normal language proficiency which is based on an increased ability in speaking, understanding and reading. It was therefore asked whether deaf children are able to develop metalinguistic proficiency without spoken language skills in English and without the existence of a literate form of sign language.

### **10.5.1 Evidence of metalinguistic skills**

The review of the literature regarding metalinguistic skills provided a model of metalinguistic proficiency as a starting point. It was proposed that metalinguistic skills are an extension of an individual's linguistic ability and not a separate set of skills identifiable only in bilingual individuals which involve analysis of linguistic knowledge and control of linguistic processing (Bialystok, 1991). Analysis of linguistic knowledge is the process through which the learner's mental representation of language evolves in that it becomes more formally structured and explicit. Control of linguistic processing involves the selection of certain linguistic information from the learner's mental representation of language so that attention can be directed to it for the purposes of a particular linguistic task. From this definition it could be predicted that distinguishing between linguistic and metalinguistic skills might, in practice, be problematic. In the analysis of the data in this study this difficulty was illustrated and these problems are discussed below. The analysis has however led to a clearer definition of metalinguistic which reflects the different dimensions of deaf children's sign bilingualism.

Some of the children's responses led to the conclusion that they understand the differences between the two languages of BSL and written English. This is considered to indicate a certain amount of metalinguistic awareness because it involves analysis of linguistic knowledge. We must however ask if it is possible to separate understanding of difference from understanding of the separate rules of each language which may not involve this level of analysis. It must also be conceded that some children's responses may have indicated a lack of metalinguistic awareness rather than the opposite. One specific example from the empirical work will be used to illustrate this difficulty. In the translation activity (from BSL to written English) none of the children translated the BSL sequence WAIT WAIT WAIT by writing down the direct gloss or transliteration of this. This was interpreted as a

demonstration of an awareness of the differences between the two languages, that is an understanding that this repetition may not be appropriate in English. It could be argued however that all of the children demonstrated a lack of metalinguistic awareness by not attempting to convey the sense of waiting over a long period of time in their English writing. A third interpretation is that their responses may have demonstrated a lack of mastery of English or of knowledge of the particular BSL sequence. This example illustrates the difficulty of distinguishing between metalinguistic ability and the ability to use aspects of two languages.

### **10.5.2 Defining metalinguistic ability within a sign bilingual context**

Despite these issues, this study found that the children were able to do more than use aspects of two separate languages and it is concluded that they demonstrate metalinguistic proficiency along the dimensions described by Bialystok (1991). The description of the deaf children's skills within these dimensions provides a fuller definition of metalinguistic ability relevant to the sign bilingual context. The three strands of the definition are reflection, analysis and control.

All of the children demonstrated that they were able to use one language to reflect upon and talk about the other. This was particularly evident in the interaction around the tasks in the comparison activity. The children also demonstrated their analysis abilities in the comparison activity by the way in which they compared aspects of the two languages. In their analysis of this it was evident that some of the children were able to make comparisons regarding the meaning expressed by the English and BSL sequences presented and others were more focused on the similarities and differences in terms of the structure of the two sequences. Both of these approaches demonstrated the ability to consider the properties of

the languages which requires analysis skills beyond those required to use different aspects of two languages.

The children demonstrated control of their linguistic processing both in their use of the two languages to solve the problems presented by the comparison work and in their written response to the translation work. In the translation work the children had to make choices about their use of written English. Although to some extent this was also contingent on levels of ability, the children still had to decide on the extent to which they used the BSL as a starting point for their writing. Some of the children demonstrated their control by using, but adapting, the gloss for the BSL so that they moved from one language to the other using the gloss as an interim stage. The children who used spoken English to prepare their written translation also demonstrated this control over moving between the two languages and an awareness of the need for a different starting point for the writing aspect of the activity. The children's control of their language use was also evident in their separate or mixed use of both languages during the interaction around the comparison activity. Most of the children moved between BSL and spoken English or SSE as appropriate to enable them to deal with the demands of the task which were considerable. They demonstrated that they were able to manipulate their two languages to the extent that they could continually change their focus of attention from a signed to a written sequence and then use their sign language or spoken language skills, or a combination of these, to form and explain their responses.

### **10.5.3 An insight into sign bilingualism through metalinguistic activities**

This study has demonstrated that questions about deaf children's metalinguistic abilities can lead us to original findings about dimensions of their language use and abilities. The interim stages in the comparison activities provided information about individual language competence, language preferences and an insight into how the children perceived

differences between BSL and English. The translation activity highlighted particularly the differences between the children's approaches to writing and the role of spoken language in this process. This activity also provided us with an insight into the children's perception or model of English and how sign language influenced the writing process.

This rich data has led to some general conclusions about the nature of the children's sign bilingualism which are likely to be relevant to other sign bilingual children. It is assumed for most bilingual children that they are moving between a stronger (first) and a weaker (second) language. For these deaf children the distinction between a first and second language is by no means clear cut. This research illustrates that the children's linguistic strengths and weaknesses are distributed across both languages and that they do not necessarily have a secure first language to draw on when participating in the activities. The comparison and the translation work indicated difficulties of comprehension of meaning, inference and analysis across both languages for all children. This leads to the question of whether many sign bilingual children's language learning experience should be considered as an incomplete acquisition of two simultaneously acquired languages (Hamers and Blanc, 1999). Certainly their access to both languages and opportunities for language development would point to this.

Despite these issues regarding the development of bilingual competence, all of the children in this study were able to compare and analyse the two languages and respond meaningfully to the metalinguistic activities. They demonstrated tacit metalinguistic skills which enabled them to engage in the activities. Although this finding is unexpected given the difficulties discussed above, it may be explained by the fact that the activities used in the study reflect the normal demands of learning in a sign bilingual environment. It could be concluded from this that, because the deaf children are used to using two languages for learning (separately

and mixed) and to moving between the two modalities of sign and text, they do develop a more analytical approach to language learning than would a child who is learning language predominately through spoken communication. The differences identified between the responses of the children with more and less spoken language skills provide an illustration of this. The spoken language stage that some of the children inserted in their translation work took the place of an analysis stage that the other children went through before they could begin to write. The children with greater spoken language skills were not more bilingual than those without but had different strategies for dealing with bilingual problems.

## **10. 6 Literacy development**

The study has investigated the extent to which deaf children's metalinguistic skills might support their English literacy development given that they generally lack the English speaking and listening skills normally considered to be an essential prerequisite. The claims made in the literature about this route to literacy development are generally not substantiated and present serious theoretical flaws which have been discussed in the review of the literature (Mayer and Wells, 1996; Paul, 1998). This study has sought to explore the potential of this model of literacy development by clarifying the nature and extent of deaf children's metalinguistic proficiency and its relevance to literacy development.

This study has shown that deaf children can engage in activities which require analytical and reflective thought about language, even though they may not have age-appropriate competence in either of their languages. They are able to talk about language and to recognise differences between their two languages. They are also able to manipulate their own language use, that is by switching between or combining their languages, to deal with

linguistic problems. Given that these skills are evident in the metalinguistic activities we will consider the implications for literacy development and classroom practice.

### **10.6.1 Metalinguistic skills which are transferable to literacy development**

The skills of analysis that the children have demonstrated in this study point to the potential of more formal English language teaching which involves discussing how language is structured, comparing the two languages of BSL and English and formally learning specific grammatical conventions. These skills of analysis seem to be particularly applicable to the reading process. That the children were able to talk about their two languages and make some comparisons between them suggests that they could acquire a vocabulary for describing aspects of BSL and English and further develop their understanding of the differences between them. Analysing language in this way cannot replace the full exposure to spoken English which supports hearing children's literacy development but can provide deaf children with the opportunity to construct a model of English. Each individual's model of English will differ depending on their identified linguistic strengths and weaknesses as is illustrated in the study in the children's different approaches to the translation work. The implications of this are that broad profiles of children's sign bilingual skills are essential to planning individual programmes for literacy instruction.

The control of linguistic processing that the children demonstrated both in their written and verbal (spoken and signed) use of language can also be considered as a skill transferable to literacy development. Of particular importance are the findings regarding the children's different approaches to writing. Because they were required to translate it was possible to observe exactly how each child moved between BSL and written English and how the children used their BSL to prepare and support their writing. This information points to a number of implications for practice. Firstly, it is evident that some bilingual deaf children



will use their access to spoken English to support their literacy development and this potential needs to be identified and harnessed. For children who are not able to rely on spoken language skills to this extent the role of BSL in writing needs to be managed by teachers and made explicit to the children themselves. This would entail making the children aware of their own strategies, such as writing down the BSL gloss and then adding English features, and supporting them to develop and diversify these strategies. Given that the children were able to talk about language it should be possible to make the writing process more transparent for them so as to increase the amount of control that they have over their approach to writing.

Metalinguistic ability as one bridge to literacy development can therefore be argued as a theoretical model but now needs to be demonstrated in practice. This model seems to provide a potential route for those children who cannot rely on access to spoken English to support the development of their literacy skills. The issue that particularly needs to be explored is whether access to the phonology and morphology of English through the spoken form can in practice be by-passed in learning to read and write English or, alternatively, whether these aspects of English can be incorporated into a teaching programme which focuses on metalinguistic abilities. We need to establish whether sufficient can be learnt about a language in this way, without full access to the spoken form, to lead to its proficient use. The findings from this study have provided a foundation for the future exploration of these questions.

### **10.7 Implications for bilingual theory**

Because this thesis has aimed to clarify our understanding of sign bilingualism through the exploration of certain concepts which have emerged through research into spoken

bilingualism the outcomes inevitably have a bearing on the theory and practice of spoken bilingual language development.

### **10.7.1 Metalinguistic awareness and literacy development**

One of the broader implications of this study relates to the relationship between metalinguistic awareness as a cognitive advantage of additive bilingualism and literacy skills. It is argued that where bilingual language learners do not possess the skills required for literacy development bilingual development does not result in cognitive advantages (Hamers, 1996). Implicit in this argument is the notion that literacy experience calls on certain cognitive skills beyond those required for ordinary linguistic communication. Ahlgren's (1992) analysis of the difference between spoken or signed languages and written languages illuminates the ways in which we are indeed dealing with learning of a completely different kind. She demonstrates that the learning of a written language is a more intellectual task than the learning of a signed or spoken language where emotion and direct contact are significant features.

As a result of this study it is suggested that the effects of bilingualism on literacy cannot be treated so simplistically. What it means to read and write should first of all be analysed. It is traditionally argued that there are different levels of literacy which might be categorised by genre (Olson, 1989) where, for example, being able to read the cereal box or a bus timetable does not equate to reading a Jane Austen novel or a scientific journal. However, Paul (1998) argues that this view should be reconceptualised and that instead we should acknowledge that there are different levels of understanding which are not solely determined by the genre or the content of a text. He suggests that many individuals will be capable of thinking and reasoning at a higher level than their reading and writing ability. Therefore,

where materials are adapted to be made more accessible individuals can still have access to the classics or complex literature.

Paul's argument that individuals can thus engage in literate thought without the high levels of reading and writing skills normally associated with such awareness has resonances with the findings of this study where individuals are able to engage in reflective analysis of their two languages despite the fact that they are not proficient in literacy skills in any language. This finding may be explained by these individuals' particular experiences of learning in an environment where both languages are used closely alongside each other, for example for curriculum delivery, and where their language education plans for bilingualism rather than assimilation and monolingualism. We might speculate therefore that being able to benefit cognitively from bilingual experience relies more on the educational conditions than on individual levels of literacy proficiency. This view is supported by Hamers and Blanc's (1999) suggestion that the benefits of bilingualism are attained where the child's social situation fosters a high level of cognitive functioning of language and of valorisation of both languages.

### **10.7.2 Minority language children**

These implications are particularly pertinent for minority language children who share certain characteristics with deaf pupils in that their preferred language has little status and their literacy-orientated skills are generally under-developed. Many groups of minority language children also write in a different language to the one they speak at home. This type of research with deaf children might therefore help in the planning and development of educational practice for minority language children. If deaf children, with limited or no access to the spoken form of English, can benefit from bilingual experience in the ways

reported in this study, minority language children should be at least equally well placed to experience parallel benefits.

## **10.8 Methodology issues**

The study identified that research development was needed which would provide more information about how sign bilingual children operate in two languages and which would point to their language learning strengths. This required a new methodology to be developed. One of the questions posed by this study was can translation activities and comparative analysis work provide us with some insight into deaf children's sign bilingualism and metalinguistic abilities? One of the outcomes of the study is therefore to critically evaluate these activities as research techniques.

Because an original research approach has been developed in this study, attention must be given to the strengths and potential of the approach as well as the intrinsic problems associated with an innovative research design. The questions asked by this study have led to the development of a methodology for exploring children's sign bilingual skills which covers new ground and presents new directions for research into sign bilingualism. The methodology used has provided original data and robust findings about each child's language abilities which have led to a fuller understanding of deaf children's developing sign bilingualism. The elicitation activities used required the children to move between and manipulate both languages and enabled parts of this process to be transparent so that reliable observations could be made. The elicitation activities successfully provided linguistic problems which represented a more concentrated experience of bilingual scenarios encountered by the children in their daily lives. The data collected allowed for patterns in the children's language use to be identified which have implications for educational practice

as well as for individual language development. The original data and the findings which result from this methodology underline its potential for further use. However, this also requires an understanding of the inevitable but intrinsic difficulties in terms of both research procedures and interpretation.

### **10.8.1 Research procedure**

Certain procedural issues must be addressed if this methodological approach is to be fully appraised. One of these relates to the role of the researcher, her interaction with the individuals and language use. The hearing researcher's direct involvement with the children and the elicitation activities was considered to be the most appropriate means of carrying out this research in this particular context. This was a choice informed by the pilot work and by the researcher's knowledge of the setting. The limitations that this may have imposed were therefore taken into account throughout the analysis of each activity. While these limitations need to be acknowledged, they do not detract from the findings which illustrate, in this case, how the different children cope in bilingual learning situations with a hearing adult. Because this situation reflects their daily experiences the conclusions drawn are considered to be pertinent for all sign bilingual deaf children.

One of the challenges the methodology posed relates to the video recording and transcription procedure. A transcription code was designed so that the children's and the researcher's language use could be fully documented. The first transcription made from the video recordings was a translation into written English of all the communication between the researcher and individuals relevant to the task. While this provided a record of each child's overall response to the problems posed it did not illustrate how they moved between the two languages and how language mixing (by the adult and the children) supported or

hindered their involvement with the tasks. A translation transcription would also have necessarily required certain assumptions to be made about the children's intended meaning where their responses were not full or clear. Given the newness of this methodology it was felt that some of their responses should be openly interpreted and discussed as the task required in places linguistically complex conceptualisation. A translation of the dialogue was however a necessary part of the transcription process as it immediately indicated the shape and direction of the dialogue between researcher and child.

One specific problem with the transcription code was that it did not allow for non-manual and non-verbal information to be transcribed (for example body movement when asking a question or role-shifting). This information had to be conveyed through contextual descriptions. Another issue relates to the attempt to indicate the dominant language being used by placement on the top line of the transcription. This was an unnecessary strategy since it was self-evident from the transcription which language was dominant and this dominance would often shift within an utterance. This emphasis on language dominance was perhaps more a reflection of the process of transcription where the main message was analysed and transcribed, whether this was conveyed in sign language or English, followed by an analysis and transcription of the features of the language used alongside the dominant language.

More general problems with this transcription system echo those reported by other researcher, namely that a gloss transcription is highly interpretative and involves a secondary language (English) to transcribe sign language data. For a more detailed analysis of the language use of the children a system such as syncWRITER (Hanke and Prillwitz, 1994), might be appropriate which is a computer programme which allows for the integration of the video and transcription material together which makes the results more

transparent and facilitates the segmentation and transcription process. Where questions about sign bilingual language use and interaction in the educational setting need to be pursued this type of system would enhance access to the data for analysis purposes, reduce the time required for transcription purposes and enhance comparability and verifiability. This study has demonstrated that more complex analysis of deaf children's language use in a sign bilingual setting would provide data valuable to sign bilingual educational planning and linguistic research.

Other issues related to the methodology concern the exact nature of the problems posed to the children. It can be argued that the findings about each child's sign bilingualism are only specific to the demands made of them in the elicitation activities. For example, the translation and picture-sequence writing activities present linguistic problems which were specific to the sources being used and the research approach taken was to identify after the activities which linguistic problems would be analysed in detail. This is inevitable given the newness of the methodology. It was important to remain open to the potential of what the elicitation tasks might reveal since no previous studies had provided specific pointers as to the outcomes of such activities. However, using the data collected from this research it would now be possible to pre-empt certain linguistic problems and design further elicitation tasks to provide data which would respond to more specific questions about the children's linguistic abilities.

The methodology used raises an interesting question regarding the children's different understanding of the terms 'meaning' and 'the same' This has been considered throughout the analysis and in this study it can be argued that the children all came to an understanding of these concepts through actively doing the activities with the researcher. The fact that all of the children engaged meaningfully and appropriately in the activities is evidence of their

understanding. The interaction with the researcher provided a necessary means of checking for the children and monitoring for the researcher. Since there is no way of discovering individual concepts of these terms an awareness of their potential difficulty was accounted for in the research methodology and analysis.

### **10.8.2 Research in a natural setting**

Because the research was conducted in a natural learning situation the children were able to engage with the researcher where they needed support or direction. This interaction in itself was considered to be valuable in the research findings and the support maintained the children's involvement in challenging activities. This does mean however that each child's experience of the activities was slightly different because they were not done under test conditions. This issue has to be balanced by the fact that a more formal procedure would have to be based on some assumptions about sign bilingualism and this would not allow for the broader and unexpected dimensions of sign bilingualism to be explored which have emerged from this study.

### **10.8.3 Interpretation of the results**

As yet there are no instruments which provide a measure of sign bilingual language ability. Even if appropriate conventional measures of assessing English or sign language ability had been available at the time of the research their potential usefulness would have been limited for the scope of this study. The data gathered in this study might therefore be considered as preliminary information which can contribute to a broader sign bilingual language ability profile. Without such measures, however, the interpretation of the results can only draw upon the detailed information about the children's language use and preferences which was sought from deaf and hearing professionals involved. Throughout the analysis this is taken into consideration and attention is given to the different possible reasons for the children's



responses, that is the extent to which the children's responses reflect their lack of knowledge of both languages, their lack of language awareness or cognitive skills.

#### **10.8.4 Opportunities for generalisation**

Because of the lack of research in this area this study has necessarily focused on providing in-depth information on a small number of subjects. This depth of information and the establishment of a methodology was required before investigations into this area can be carried out on a broader scale with more subjects and longitudinal data. While some of the findings from this study remain speculative the data does provide rich information about each child, in relation to areas of their linguistic abilities which have not previously been considered. Because four elicitation activities were conducted with each child over the period of one academic year, patterns in each child's behaviour did emerge which provided useful information about some of the processes involved in working between written English and sign language. In conclusion, this methodology has led to the collection of some original data and it has the potential to be developed to further explore specific areas of deaf children's sign bilingualism.

### **10.9 Final conclusions**

This thesis has established a unique approach to studying aspects of deaf children's developing sign bilingualism. The outcomes of the thesis make a significant contribution to research in this area and have a number of implications for practice.

#### **10.9.1 The heterogeneous nature of sign bilingualism**

The findings regarding the diverse nature of individual sign bilingualism provide an opportunity to reappraise the starting point and direction of research into sign bilingual

language development and point to implications for assessing sign bilingual skills in the educational context. By investigating the children's use of both languages to solve certain problems this study has established that there are aspects of individual sign bilingualism which are significant for the continued development of sign bilingual proficiency and for educational practice which might not be identified on conventional measures of separate language ability. A central conclusion is therefore that a full profile of a child's sign bilingualism must consider the interaction between the child's two languages and how the child manipulates two languages and three modalities as well as their separate abilities in either sign language or English. This has implications for approaches to further research and for assessment in the educational context.

### **10.9.2 The concept of metalinguistic proficiency**

Because this study has explored sign bilingual language abilities with a focus on metalinguistic proficiency important dimensions of sign bilingualism discussed above have emerged. The concept of metalinguistic proficiency, although initially difficult to pin down, is therefore a useful one in terms of a research framework as it opens up a broader spectrum of skills beyond those of the proficient use of two separate languages. This framework for observing bilingual language development and use is particularly pertinent for sign bilingual children since their bilingualism may not include the use of spoken English. It is important to be able to identify therefore what additional or compensatory skills these children may be developing in order to deal with the everyday demands of a bilingual learning situation where English often dominates. This conceptual framework is also relevant to the study of spoken language bilingualism: Firstly, because it presents an opportunity to consider individual linguistic strengths which may not normally be identified through conventional measures of separate language assessment; secondly, research or assessment of individual

language skills within this framework will inevitably lead to the development of teaching approaches which build upon these identified skills.

### **10.9.3 Implications for deaf education**

The findings and discussion from this study lead us to the conclusion that bilingual deaf children can be seen as a specific group within the wider bilingual community. There are sufficient social, political and linguistic parallels to enable us to draw on general bilingual theory as a basis for the exploration of features of sign bilingualism but educational practice needs to recognise certain differences exemplified in this study. These should include the circumstances in which deaf children acquire sign language, their access to spoken English, their experience of literacy and of code-mixing in bilingual environments.

Several practical educational strategies also emerge in response to these issues from the study findings. Deaf children's literacy development might benefit from an introduction to signwriting as well as experience of converting spoken to written discourse (for example stories or plays). Both of these approaches would enable the contrasting conventions of 'S-languages' and 'W-languages' to be more transparent. In English teaching the children's BSL skills need to become a more holistic and integral part of the process rather than a means to an end. For example, in translation work, more talk in BSL about writing would support the children's concept development and steer them away from writing down the English gloss of the BSL and accepting this as a meaningful translation. Within-language translation work would be particularly helpful as it would broaden the children's language repertoire and enable them to focus on the meaning to be translated rather than the form.

With regard to the code-mixing issue, teachers should be mindful of their own language use and be explicit where possible about their separate or mixed use of BSL and English. The children need to be made aware of the differences between the mixed and separate use of their two languages as well as the characteristics of their own mixed language use and the contexts in which this usually occurs. In summary deaf education should aim to further develop the tacit language awareness which is a result of deaf children's bilingual experience. The characteristics discussed which do set them apart from their hearing counterparts should be central to educational planning and goals not marginalised as awkward differences.

#### **10.9.4 Future research directions**

This study has provided a foundation for the development of such practice by describing metalinguistic proficiency within a sign bilingual context and demonstrating the relevance of such skills to the language learning context, particularly regarding literacy development. From the findings of this study it is concluded that a model of literacy development which exploits metalinguistic abilities can be argued for theoretically. This model does however need to be explored in practice and fully evaluated. Research is needed into the effectiveness of an approach based on this model in terms of deaf children's development of all of the components of literacy. The role and development of phonological awareness in particular needs to be scrutinised as this is one area of literacy development that this model does not currently address.

Finally, this study presents some original and positive findings which provide a firm basis for continued research as well as pointers for the development of sign bilingual practice. The findings are positive in that they reveal sign bilingual deaf children's areas of strength as well as difficulty and shed some light on an area where the research and pedagogical issues

have not previously been clearly identified. It has been necessary to forge a methodological starting point and overall approach for this study and this has led to findings which make a significant contribution to this developing field. This study moves us beyond the discussion of sign bilingual deaf children as a homogenous group and enables us to identify more clearly some of the individual characteristics of sign bilingualism including dimensions of metalinguistic proficiency. Deaf children's sign bilingual language ability amounts to more than the sum of their separate skills in BSL and English and should be conceptualised along a language continuum which reflects their skills within, between and across each language domain.

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# **LIST OF APPENDICES**

## **APPENDIX 1.**

Profiles of children in main study

## **APPENDIX 2. (non-print item not bound with thesis)**

Video of the BSL story used as the source for the translation writing (Chapter 6).

## **APPENDIX 3.**

Picture sequence used as a stimulus for the children's non-translation writing (Chapter 7).

## **APPENDIX 4.**

The children's full written translations of the BSL story (Chapter 6).

## **APPENDIX 5.**

Interview schedules (Chapter 5.).

## **APPENDIX 6.**

Timetable of data collection

**APPENDIX 1. Profiles of children in main study**

For each child information was gathered through interviews with their key hearing and deaf adults in the school setting. This information is summarised in the individual profiles below.

**Profile for Nicola**

**D.O.B** 21.11.87

**Age at time of research:** 8 years

**Family details:** only child of hearing parents

**Language use at home:** mother uses spoken English with a few signs; father uses Sign Supported English (father lives apart)

**Profile of deafness:** severe, bilateral sensori-neural deafness since birth (best average loss 95dB)

**Use of hearing-aids:** inconsistent use of aids; no apparent benefit to Nicola’s perception of speech

**Educational provision:** sign bilingual educational provision since preschool; currently in resourced unit within mainstream school with 3 deaf peers; integrated for 50% of the time into mainstream with support; taught by deaf and hearing adults

**Language use in school:** access to the school curriculum most successfully achieved through BSL; for communicating with hearing peers and adults uses mainly signs from BSL in English word order, with some lip-patterns

**English language development:** working within National Curriculum level 2. for Reading and Writing; spoken English use consists of lip patterns and some vocalisation in English word order; speech not fully intelligible to an unfamiliar adult

**BSL development:** confident receptive and expressive skills; beginning to be able to follow and express complex curriculum concepts

**Preferred language:** preferred language is BSL; positive and motivated approach to learning and using both languages

**Child’s stated language preference (translated):** ‘signing....signing is easy, speaking is difficult’

**Profile for Lucy****D.O.B.** 27.11.87**Age at the time of data collection:** 8 years**Family details:** partially hearing mother; hearing father and sibling**Language use at home:** mother uses mainly SSE (some BSL) father and brother mainly spoken English with some sign support**Profile of deafness:** profound, bilateral, sensori-neural deafness since birth (best average loss 101dB)**Use of hearing-aids:** consistent use and maintenance of hearing aids; apparent benefits regarding speech perception (intonation and pitch in own voice)**Educational provision:** sign bilingual educational provision since preschool; currently in resourced unit within mainstream school with 3 deaf peers; integrated for 50% of the time into mainstream with support; taught by deaf and hearing adults**Language use in school:** access to the school curriculum most successfully achieved through BSL; influence of English present in expressive BSL skills**English language development:** working within National Curriculum level 2. for Reading and Writing; spoken English consists of intelligible speech with appropriate intonation and pitch; demonstrates some knowledge of English sentence and grammatical structures**BSL development:** sufficient expressive and receptive BSL skills to participate in contextualised routine conversations and follow complex instructions and narrative; developing ability to understand and express more complex curriculum concepts although needs some additional explanation or repetition**Preferred language:** prefers to receive and express complex information more in BSL but always willing to attempt English; frequently mixes SSE with BSL; positive and motivated approach to learning and using both languages.**Child's stated language preference (translated):** 'signing and talking a little bit'

**Profile for Simon****D.O.B.** 23.04.88**Age at the time of data collection:** 7 years**Family details:** hearing parents and siblings**Language use at home:** mainly spoken English (occasional sign support)**Profile of deafness:** moderate, sensori-neural, bilateral deafness (best average loss 62dB)**Use of hearing aids:** consistent and independent use and maintenance of hearing aids; relies on aids for spoken English (speech and listening work)**Educational provision:** sign bilingual educational provision since preschool; currently in resourced unit within mainstream school with 3 deaf peers; integrated for 50% of the time into mainstream with support; taught by deaf and hearing adults**Language use in school:** access to the school curriculum most successfully achieved through BSL although influence of English present in expressive BSL; can participate in learning through speaking and listening until level of sentence complexity increases then needs BSL input or sign support (SSE)**English language development:** working within National Curriculum level 2. for Reading and Writing; spoken English consists of intelligible voice with appropriate lip patterns and word order, although not always grammatically correct**BSL development:** sufficient expressive BSL for contextualised routine conversation and instructions but needs repetition and support for following complex requests or curriculum concepts; adds a lot of English features to her expressive BSL**Preferred language:** currently most efficiently accesses curriculum and communicates with peers and adult through BSL but English strengths beginning to emerge; positive and motivated approach to learning and using both languages**Child's stated language preference (translated):** 'speaking with sign'

**Profile for Jake****D.O.B:** 11.05.88**Age at the time of data collection:** 7 years**Family details:** hearing parents and sibling**Language use at home:** parents using SSE and BSL as much as possible**Profile of deafness:** profound, sensori-neural, bilateral loss since birth (best average loss 105dB);**Use of hearing-aids:** reliable and consistent use of aids, independently maintains and monitors own aids**Educational provision:** sign bilingual educational provision since preschool; currently in resourced unit within mainstream school with 3 deaf peers; integrated for 50% of the time into mainstream with support; taught by deaf and hearing adults**Language use in school:** access to the school curriculum only achieved through BSL; confident receptive and expressive BSL skills but very limited receptive and expressive English skills**English language development:** working within National Curriculum level 1. Reading and Writing; spoken English consists of lip patterns and some vocalisation using only basic grammar and sentence structures**BSL development:** sufficient expressive and receptive BSL skills to participate in contextualised routine conversations and follow complex instructions and narrative; developing ability to understand and express more complex curriculum concepts; does not add English features to expressive BSL but confuses the languages in writing activities (tries to write down BSL)**Preferred language:** BSL most fluent language and proficient means of accessing and conveying information; motivated and positive approach to learning BSL; experiences frequent frustration with spoken and written English**Child's stated language preference (translated):** 'sign best'

**Profile for Hannah****D.O.B.** 26.09.87**Age at time of data collection:** 8 years**Family details:** partially hearing mother; deaf father and sibling**Language use at home:** mother uses mainly Sign Supported English; Father uses BSL; middle sister mainly spoken language with some signs, younger sister developing BSL**Profile of deafness:** severe, bilateral, sensori-neural deafness since birth (best average loss 89dB)**Use of hearing aids:** consistent and positive use of hearing-aids; independent management and monitoring**Educational provision:** sign bilingual educational provision since preschool; currently in resourced unit within mainstream school with 3 deaf peers, integrated for 50% of the time into mainstream with support; taught by deaf and hearing adults**Language use in school:** undergoing transition from accessing full curriculum through BSL to accessing majority of mainstream curriculum through Sign Supported English; currently in expressive language use switches to BSL from spoken English particularly where cannot express the complexity of what she wishes to say in spoken English**English language development:** working within National Curriculum level 2. Reading and Writing; uses clear spoken English with increasingly correct grammatical and sentence structures although some structures telegraphic and immature**BSL development:** expressive BSL confident for contextualised routine conversation and instructions but needs repetition and support for following complex requests or curriculum concepts; adds a lot of English features to expressive BSL; developing imaginative use of language and ability to express difficult curriculum concepts**Preferred language:** able to use BSL and SSE equally well but use of English preferred; positive and motivated approach to learning both languages.**Child's stated language preference (translated):** 'all...sign and voice'

**Profile for Mark****D.O.B** 20/7/87**Age at time of data collection:** 8 years (Y3)**Family details:** hearing parents and sibling**Language use at home:** Sign Supported English**Profile of deafness:** mild loss, elective deafness queried (best average loss 31dB)**Use of hearing aids:** prefers not to use them; seems to hear more without them**Educational provision:** nursery education in local nursery with 1;1 support; sign bilingual educational provision since reception; currently in resourced unit within mainstream school with 3 deaf peers. integrated for 50% of the time into mainstream with support; taught by deaf and hearing adults**Language use in school:** can access full curriculum through English with sign support but prefers discussion and explanation through BSL; prefers to use BSL but with hearing audience (peers and adults) adds vocalisation and/or lip patterns**English language development:** working between National Curriculum levels 2 - 3.

Reading and Writing; spoken English consists of strained but intelligible use of voice with appropriate lip patterns with increasing grammatical accuracy; prefers to use sign supported English

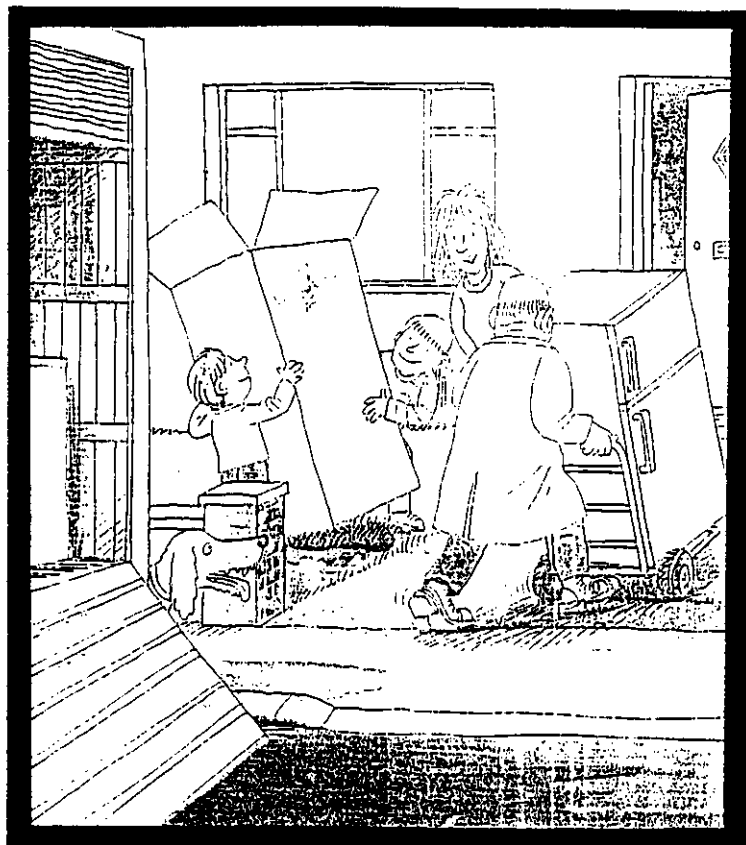
**BSL development:** receptive and expressive BSL confident with contextualised routine/daily conversation, instructions and narrative; developing receptive and expressive skills to access and express complex curriculum concepts**Preferred language:** equal level of skills in BSL and SSE but prefers to use BSL and to access information through BSL; reluctant to use spoken English**Child's stated language preference (translated):** 'signing...no...voice..'



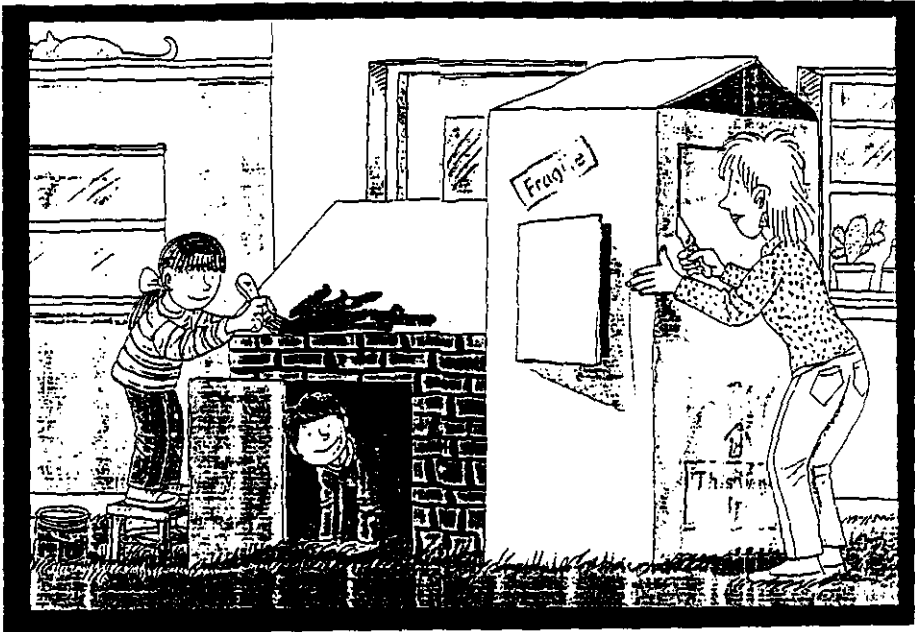
### APPENDIX 3.

Picture sequence used as a stimulus for the non-translation writing (Chapter 7).

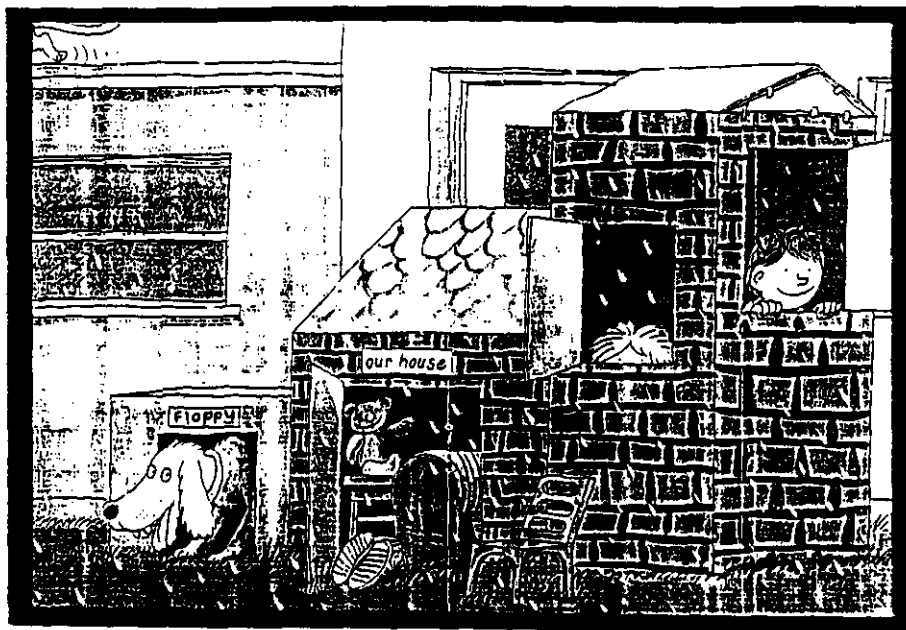
Picture 1.



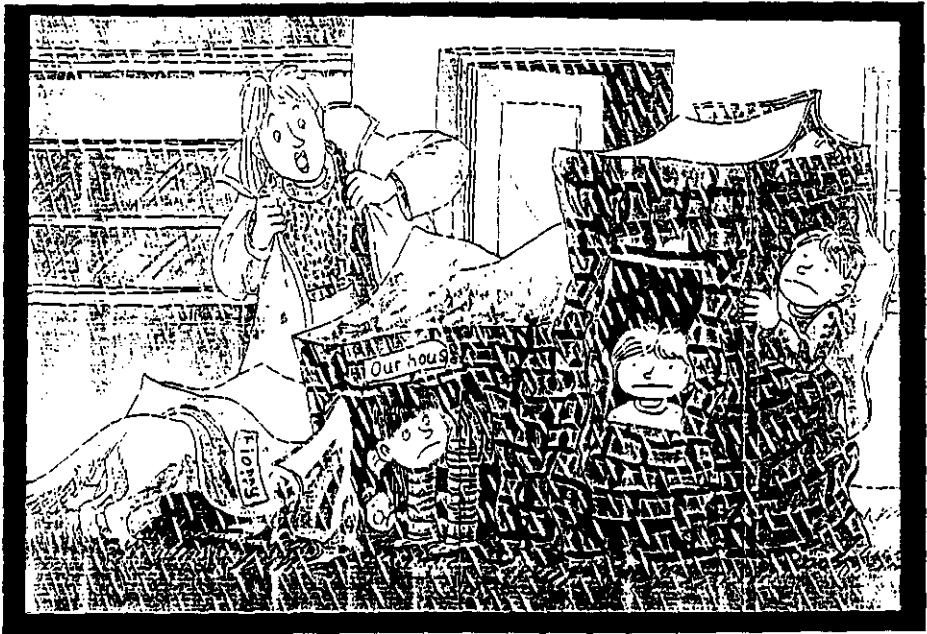
Picture 2.



Picture 3.



Picture 4.



Picture 5.



## APPENDIX 4.

The children's full written translations of the BSL story

### *Hannah*

" Josh and BiLLy"

Josh got a new dog its NaMe BiLLy.  
Josh got a idea for DADDY BirtHday Cake.  
BiLLy was HaPPy to buy the Cake.  
Josh was waiting for DADDy back  
DADDy was back Josh said COME here  
there you are it disappear DADDy saw BiLLy  
got a chocolate round Billy mouh.

### *Jake*

I Josh DaDD saiD  
Birthday Josh excitieD  
Saturday thought  
cak shop with Daddy  
Not Dog with got  
shop Daddy Josh  
make caks make Josh caks  
wait Daddy cak  
dissapeared thought  
Dog chocolate eat  
Dog Josh saw Dog  
cholate all over his face

Josh have New Dog.  
Josh said what we will do.  
Mum have idea. we will go to  
The Shop. What we will  
buy. MuM idea buy some  
chocolate. to make  
cake. I finished the cake.  
wait for DaD arrive home  
Him arrive home now  
Come here oh no said  
Mum. Mum said Josh where  
Dog. Josh found Dog. Dog  
has chocolate on his  
mouth.

Hi My little son billy new.  
dog want come with in shoP.  
better leave house went to shoP look  
around idea make chocolate cake.  
Chocolate cake leave smell nice  
wait for DaDDy at last home  
cake gone where dog chocolate  
all over his mouth.

John have new dog name billy  
dad birthday wundered idea  
have cake billy wants  
with dad Dad said no Dad  
said you stay yes wait  
there please go shop  
look around chocolate cake  
Make Chocolate cake  
John chocolate cake  
in oven John wanit at last

ready oven look beautiful  
chocolate cake  
Like the chocolate cake  
wants Dad Dad at last  
home come here Dad  
Shom chocolate cake  
nothing cake Look  
dog look dog eat the  
chocolate cake  
John Look dog cake eat  
John Look dog cake  
all over his face

*Simon*

Short story I had boy called.  
Josh got a new dog called.  
Bill before DaDDy Birthday.  
They Saturday DaDDy birthday.  
Josh excited  
What shall we do.  
make cake  
go to shop.  
dog wants To go To shop.  
What shall we buy  
make chocolate cake  
buy cake all.  
go home wait. DaDDy come home.  
DaDDy said where the cake.  
boy saw dog ah! dog got.  
cake all over.  
dog Happy.



## **APPENDIX 5.**

### **Interview Schedules**

#### **Questions asked of the children**

1. What do you think deaf means?
2. What do you think hearing means?
3. Are you deaf or hearing?
4. Are your mum/dad/brothers/sisters deaf or hearing?
5. What do you think Sign Language is?
6. What do you think English is?
7. Do you know why they are different?
8. Do you like signing?
9. Do you use sign language at school? If so why and who with?
10. Do you use sign language at home? If so why and who with?
11. Do you like speaking/using your voice?
12. Do you use your voice at school? If so why and who with?
13. Do you use your voice at home? If so why and who with?
14. Who uses voice and who signs in your family?
15. Do you prefer signing, speaking or using both together?
16. Do you prefer your teacher to sign, speak or use both together?
17. What English work do you enjoy most?
18. What English work do you find difficult?
19. Do you think good English is important when you grow up? If so what for?

#### **Questions asked of the deaf adults**

The deaf adults were asked the following about each of the children they worked with involved in the research:

1. How does s/he communicate with deaf peers and adults?
2. How does s/he communicate with hearing peers and adults?
3. What BSL teaching does s/he receive?
4. How would you describe her/his BSL receptive skills?
5. How would you describe her/his BSL expressive skills?
6. What is her/his overall attitude to BSL learning?
7. What are her/his strengths and weaknesses in their BSL learning?
8. How are new curriculum concepts best explained to her/him?

9. How are the curriculum lessons most successfully accessed for her/him?
10. How does s/he prefer to discuss curriculum content?
11. Does s/he switch and mix languages? What sort of situations?
12. Does s/he ever confuse languages?
13. Does s/he show an understanding of the differences between the two languages?
14. What would say is her/his preferred language?

### **Questions asked of the hearing adults**

The hearing adults were asked the following about each of the children they worked with involved in the research:

1. How does s/he communicate with deaf peers and adults?
2. How does s/he communicate with hearing peers and adults?
3. What English language teaching does s/he receive?
4. How does s/he approach reading?
5. How does s/he approach writing?
6. How does s/he approach spoken language work?
7. How well does s/he use listening skills?
8. What is her/his overall attitude to English learning?
9. What are her/his strengths and weaknesses in their English learning?
10. How are new curriculum concepts best explained to her/him?
11. How are the curriculum lessons most successfully accessed for her/him?
12. How does s/he prefer to discuss curriculum content?
13. Does s/he switch and mix languages? What sort of situations?
14. Does s/he ever confuse languages?
15. Does s/he show an understanding of the differences between the two languages?
16. What would say is her/his preferred language?

**APPENDIX 6.**

Timetable of data collection for the main study

<b>DATA COLLECTION</b>	<b>SEQUENCE OF SCHOOL VISITS</b> (2 schools with 3 participants in each)	<b>TIME-SCALE OVER 1 SCHOOL YEAR</b>
Set up research arrangements; consult with schools, parents and head of service; negotiate research schedule and procedures	Series of meetings in each school and with the Hearing-Impaired service	September October
Pilot Translation activity with 6 individual children	One visit to each school; 3 individual activities each day	November
Pilot Comparison activity with 6 individual children	One visit to each school; 3 individual activities each day	December
Elicitation activity 1. Chapter 6. Translation writing with 6 individual children	One visit to each school; 3 individual activities each day	January
Elicitation activity 2. Chapter 7. Non-translation writing with 6 individual children	One visit to each school; 3 individual activities each day	January
Elicitation activity 3. Chapter 8. Comparison activity I with 6 individual children	Three visits to each school; 1 individual activity each day	February March
Elicitation Activity 4. Chapter 9. Comparison activity II with 6 individual children	Three visits to each school; 1 individual activity each day	April May
Interviews with 6 individual children	One visit to each school; 3 interviews each day	June
Interviews with 2 hearing and 2 deaf adults	One visit to each school; 3 interviews each day	July